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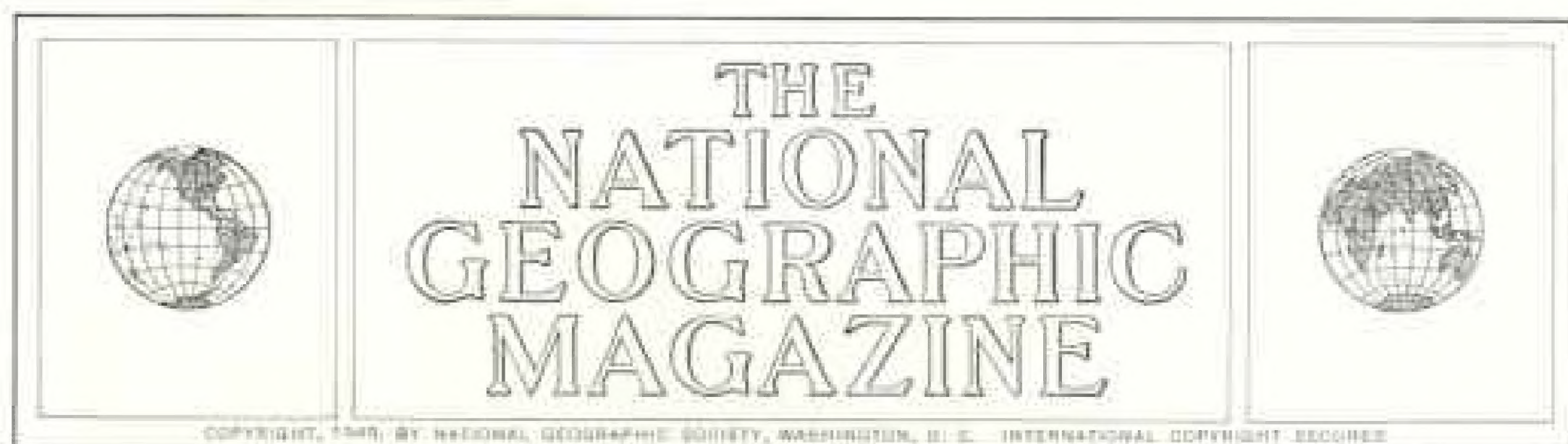
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## War-torn Greece Looks Ahead

BY MAYNARD OWEN WILLIAMS

*With Illustrations from Photographs by the Author*

ON THE once-barren island of Makronisi, off the tip of Attica,\* I watched tough Greek Army officers play the role of the good shepherd.

It is a strange reversal of the Biblical story, in which the good shepherd goes into the hills to find one stray sheep while the other ninety and nine are safe in the fold. For in this instance the ninety and nine are out in the hills away, fighting for Hellas. The lost one, who persists in staying that way, enjoys here the shelter of the strangest fold I have ever seen.

Makronisi, meaning Long Island, has been converted into a novel "concentration camp" where thousands of Communist sympathizers and former guerrilla fighters are being transformed into loyal, democratic citizens (pages 738, 739).

When the Greek Army found Communists or "fellow travelers" among its recruits, the high command decided to isolate them. About two years ago this camp was founded to receive them. Hundreds of captured or surrendered guerrilla fighters were added.

At the time Col. George Bairaktaris conceived the idea of Makronisi, his own brother was a Communist. Knowing his brother's basic loyalty, the colonel sought some way to let him, and thousands like him, prove it.

Of the 21,800 men who have been exposed to its course in regeneration, only 800 have been adjudged incorrigible. There is no harsh or "silent" treatment for those who refuse to swear allegiance to their homeland. There is a general feeling that time is on the side of the right.

At the time of my visit, some 7,800 "Pio-

neers" had returned to the ranks, to fight or die for Greece. Many helped free the Peloponnesus from Communist bands. Thousands now fight in the north. Others, unable to qualify for the Army, have returned to peaceful civilian pursuits.

Long Island is marked with patriotic slogans in whitewashed rocks, visible from miles away. "Hail to King Paul," shouts one steep hillside. "Hail to Hellas," echoes another.

With Col. James H. Phillips, Chief of Staff with the Joint U. S. Military Advisory and Planning Group; Dowsley Clark, Director of Information of the Economic Cooperation Administration; and Mrs. Clark, I went to the island to see this Greek experiment in regeneration.

### A Queen's Triumphal Ride

As we reached the mess hall, decorated with Greek, British, and American flags, hundreds of Pioneers flocked up the hill. Here on this barren isle they seemed to be living an abundant life with spirit, vigor, and enthusiasm.

When Queen Frederika visited Makronisi, these men lifted her to their shoulders and paraded her through the camp. Some conservatives humped their eyebrows when the picture was published, but the multitude have taken the petite, hard-working queen to their hearts (page 712).

Colonel Bairaktaris's first step at the camp was to create an atmosphere of civilized behavior, within which neither officer nor comrade could reproach a Pioneer for his past.

\* All place names in this article are located on the map supplement, "Classical Lands of the Mediterranean," with this issue of the NATIONAL GEOGRAPHIC.





### Queen Frederika, Young, Beautiful, and Democratic, Is the Idol of Greek Soldiers

The German-born, English-reared Queen has won her adopted country's affection by caring for its refugee children (pages 719, 721). She rides the shoulders of repentant Communists on Makronisi. The picture, here rephotographed with a Makronisi "Pioneer," was displayed in Athens (pages 711, 738, 739).

Then, within this favorable environment, each individual is encouraged to "find himself" and develop his talents to the full.

While the heaven is working, Communist propaganda is honestly met in discussion. Makronisi has its own 40-page newspaper and a broadcasting station.

When a Bulgar radio invited the Pioneers to "leave the servitude of camp for the good guerrilla life," Greece's alert Minister of the Press, Michael Ailianos, sparked back:

"I've seen to it that every man on Makronisi has heard your plea. Are you doing the same for your boys?"

Probably not, for despite added help from Albania and Bulgaria, the "good guerrilla life," these days, is not so good.

We entered the mess hall with the men, to drink our ceremonial coffee. Suddenly the sound of magnificent group singing flooded the hall. The composer of the battalion song now fights in the Grammos Mountains. His

stirring words express the common sense:

"To Hellas's sun and waves and much-loved land we pledge ourselves. Our strong Hellenic heartbeat drives us on."

"Christ is risen" pennons, left over from Easter, lent a festive touch. Beside a cardboard bell tower paper swallows had built their nests. Between portraits of King and Queen was a life-sized Christ.

Our luncheon host, a major, was magnetic, handsome, and realistic; his approach that of conviction: "I was a Communist, too, but I got over it. For, despite everything, I am a Greek."

Few malcontents can resist that appeal, although I interviewed some who still do.

Like most of Greece, one man was "tired of fighting." Unlike Greece, he had quit. I could not pry from any of these men any good reason he had for holding out.

Strolling through the company streets, I observed in each one some monument, shaped



like Parthenon or church, the voluntary self-expression of free men.

Returning to Athens, which had endured nine years of war, hunger, occupation, and mass execution, I found the Greeks enjoying a cultural revival.

The national budget, like many another, is out of balance, imports alarmingly exceed exports, one Greek in eight is either a soldier or a refugee, and civil war drags on in the maze of mountains which faces the Iron Curtain to the north.

But as I again walked the familiar streets, apprehension over the fate of my friends gave way to wonder at their spirit. In the serio-comedy of Greek life, gaiety and beauty again grace the stage. To a Greek, tragedy is something dramatists wrote, ages ago, although few Hellenes have escaped its pain.

Art flourishes. Greek painters turn out so much good work that it is difficult to keep up with the excellent portraits, clean water colors, and masterly oils of native life or milk-white church domes by a cobalt sea.

#### Taking Tea with a Dryad

Pageantry of village costumes and earth-shaking peasant steps are once more in full swing. Several dancing schools stage shows which enliven tired old ruins with visions of dryads or nymphs. It was a memorable experience to take tea with a girl whom I had seen a few days before as a lightly clad figure freed from a time-old pose on some ancient urn.

One Monday night, in summer, within the ancient walls of the Odeion of Atticus Herodes, I sat with 5,000 people on the south slope of the Acropolis and listened to symphonic music by Mozart and Schubert, and by such modern Greek composers as A. Nezerite, G. Poneride, G. Lekeu, and George Sklavou.

Above us, at the edge of the Acropolis, a corner of the matchless Parthenon thrust a shoulder of sun-tanned marble against the velvet sky (page 728).

Flower shops, stooped under the Parliament ramp beside Sofia Boulevard, again glow with dahlias and marguerites, gladiolas, and "red-hot pokers." Candy and pastry shops seem as luxurious as ever, especially when one sees the prices.

Constitution Square is still divided into palm-shaded gardens, kept green with precious water, and a vast empty space which suddenly sprouts tables and chairs when the summer sun goes down (page 714).

After the heat of the day, neatly dressed children are brought here by proud parents. Male groups meet for political argument, pref-

aced by the inevitable, "Now if I were Prime Minister . . ." However much Greeks love Greece, Constitution Square orators always seem to belong to the Opposition!

#### Waiters Dodge Through Traffic

This open-air forum is "provisioned" across three of the busiest streets in Athens. Each thimble of hot, thick coffee; each accompanying dewy glass of water; each sugary pastry; each heat-smoothed cone of ice cream is carried through a maze of buses, trams, private cars, and jaywalkers by waiters who must lead charmed lives. I know some who have survived 20 years of traffic-defying tray carrying.

Slow service is quite in keeping, for people gather here not to eat but to sit. With each bottle of pop one has the right to an evening of gossip or philosophy.

At our roof garden one hears comparatively little Greek, for Athens has acquired an American accent.

Most of the offices of the ECA, which administers American aid under the Marshall Plan (page 718), are in one of Athens's largest buildings, on the site of the former Royal Stables, bounded by America, Venizelos, Jan Smuts, and Winston Churchill Streets. An Army post office brings Greece within two days of Washington by air mail. A post exchange occupies one busy corner. On another corner is a snack bar, serving doughnuts, chocolate malts, and a second cup of coffee free. At the commissary, wives of members of the American Mission for Aid to Greece and of the ECA buy frozen chickens, California oranges, and graham crackers—just like home.

Such arrangements prevent American visitors from depleting local food markets. Since purchases are paid for with military script, no burden is placed on dollar exchange.

Clean, spacious Mission buses run to seaside Glifáda or shady Kifisiá, in the cool lap of Mount Pentelikon (Pendelikón), where many of the hotels and houses are leased to Americans at generous rents.

#### Famous Landmarks Intact

Omonia Square, Athens's Place de la Concorde, has known violence, but I found my favorite landmarks intact. Friends about whose safety I had long wondered greeted me as if nothing had happened since National Geographic photographer Stewart and I worked in Greece in 1939.

Around bright flower beds in the National Garden, so recently a death-haunted potter's field, nursemaids and soldiers flirt as of yore.





### Rain Deluges Constitution Square. Athenians Appear to Walk on Water

An English-language sign, "Save the children of Greece from abduction," protests the Communists' seizure of youngsters for indoctrination within the Iron Curtain. High on the misty Acropolis stand the 2,400-year-old Parthenon (left) and the Erechtheum (pages 713 and 718).

At a Near East Foundation playground, equipped with funds from A. A. Hyde of Wichita, Kansas, happy-faced children sang like cherubs under the direction of a former orphan. Near by, 1,180 Greeks were shot down by German execution squads.

Papering the sidewalk kiosks are American magazines and plastic-bound books. Greece craves "food for thought," from Mark Twain and Hawthorne to hard-shooting Westerns and movie-magazine cheesecake.

At Eleftheroudakis's bookstore, a favorite haunt of my father before me, I got a bargain—E. V. Rieu's splendid translation of Homer's *Odyssey*, for 35 cents.

On Athens's Main Street, only three steps from the summer glare, the United States Information Service Library is crowded all day. "America" is a magic word. Here in such publications as tool catalogues, encyclopedias, the *U. S. News*, the *New Yorker*, and the *NATIONAL GEOGRAPHIC*, the U. S. A. is pictured and described.

Prize-winning photographs line the walls and pertinent—or impertinent—cartoons are shown, with the legends in Greek, so that no one will miss the point.

Here I saw an Orthodox priest with silky beard reading a magazine. When I returned with my camera, he had gone.

"Wait a minute; I'll get another one," said a librarian. And soon through the hot streets plodded Archimandrite Eftychios Papaioannides to add the dignity of beard and robe to this popular meeting place (page 719).

### Athens Loves a Parade

Athens loves a parade and the flash of banners. From my balcony overlooking Constitution Square I watched the Sunday procession of virile, skirted Evzones, of the King's Guard Battalion, on their way to the changing of the guard at the tomb of Greece's Unknown Soldier (pages 730, 731).

On St. Paul's Day I looked down on cheering crowds as the smartly uniformed King





Alfred Clark, U. S. Army Engineers

### Americans Restore the 1,100-foot Braillos Bridge, Successor to Thermopylae Pass

This wild gorge was bridged when the Simplon Orient Express linked Athens with Paris and Istanbul by rail. During the war retreating Germans did a thorough demolition job. Col. D. W. Griffiths, U. S. Army Engineers, here addresses Greek officials at completion of the reconstruction in April, 1949 (page 721). Historic Thermopylae, no longer an important route, lies a few miles away.

Paul and beautiful Queen Frederika rode to and from the Cathedral ceremony.

Twice in recent months I heard the "Dead March" sound here as the massive Archbishop Damaskinos, onetime Regent and Premier, and frail Premier Themistocles Sophoulis, their coffins bare to the open sky, were borne past toward the grave.

Meanwhile, in the hornet-nest mountains of Epirus, Macedonia, and Thrace, some 200 miles away, the Army parades its heavy trucks as the armament of modern mechanized war moves along mined roads toward ambushed guerrillas. The menace of Stalinism, seeking access to the Mediterranean through Greece, brought America into the picture.

The Greeks saved Western civilization from Oriental despotism when the world was young. Now Greece, hard against the Iron Curtain, defends democracy and we give aid.

After talking with American Mission heads, I asked an old friend, in charge of field men,

where I could accompany one of his legmen and trouble shooters on his rounds.

"How about starting with Crete?"

So I flew to Crete in an hour in a shiny DC-3.

Help from the skies came to Greece just in time. Roads were mined, bridges broken, through road traffic suspended. But silver-bright planes drone over friendly and enemy territory alike, preventing Greece from again becoming a group of isolated city-states, sandwiched between enemy-held hills.

Like flashing spokes around Hassani (Ellinikon) Airport, in the honey-scented lap of Hymettus, 15 TAE (Greek Air Lines) routes reach out to Alexandroupolis, Komotini, Kavála, Salonika (Thessaloniki), Vólos, Larissa, Kozáni, Ioánnina, Agrínion, Trípolis, Kalamata (Kalámai), Khaniá, Iráklion, to Egypt's Alexandria, and to Rhodes (Ródhos), capital of the long-Greek, but newly won Dodecanese.



Athens is the focus of many foreign air lines, but without its own planes Greece could hardly function as a unit. The loan which the ECA arranged for TAE was to have been paid in 36 months. Instead, it was paid in full in eight.

#### Athens an Air-line Center

Greek Air Lines has about 20 flights a day from Athens and about 45 a week from other ECA-built fields. Hellenic Air Lines has about half as many.

The man in front of me during my flight to Crete had flown before. His wife, just as obviously, had not. His chivalrous solicitude, as he showed her how to adjust safety belt, ventilator, and seat light and, with exaggerated jaw movement, how to "swallow altitude," was a joy to watch.

Two-hundred-and-thirty-pound tireless John Asher, ECA field representative, pretty well dwarfing his jeep, met my plane near Khaniá, and we were off for a conference on automotive transportation. The long road along narrow Crete brought out the stuff we and our jeep were made of. Along or above it, we bumped doggedly on from Khaniá to Saint Nicholas (Áyios Nikólaos).

Asher, who had ministered to thousands of refugees on their return home when the Peloponnesus was freed, found Crete "tame." I found its transportation as wild as in 1929.\*

New buses had already been landed in Crete. A few weeks later road building was to begin. As fast as the roadmakers advanced, the buses would follow. For the moment, John Mickam, ECA automotive specialist, was meeting the operators, listening to their problems, and acting as their contact man with the authorities in Athens.

"You're going to have compulsory inspections, twice a year," he said. "When your bus or truck has been inspected, you'll know that it's safe. Dangerous vehicles will be taken off the roads."

In Athens, 180 ambitious young men build aluminum bus bodies on American chassis during half of each day. The rest of the time they study the theory of mechanics, shop procedure, and mathematics.

One new bus leaves their hands every day. Tumble-down buses, common when I arrived, have almost disappeared from the streets of Athens.

How much does a resplendent, soft-seated bus, its chassis built in South Bend or Detroit and its body built in Greece under American patents, cost the American taxpayer?

Not a cent.

When an operator's license is approved, he

buys the machine he likes in the private market. What with transportation costs and taxes, he pays about twice as much as the same car would cost in Kalamazoo. What the ECA does is to change his drachmas into dollars.

The Greek money goes into a counterpart fund, to pay for roads, bridges, ports, canals, and other public works. But since Greece is fighting a costly civil war against Communist-aided guerrillas, much of the counterpart fund now bolsters a budget depleted by military expenditures and refugee relief.

Back in Khaniá, after a cross-Crete scramble to study irrigation sites in the rich Mes-sara plain to the south, we enjoyed a trip to Suda Island, at the entrance of many-warred Suda Bay (Kólpos Soudhas). When our launch grounded at Kalivia on our return, we were greeted with smiles and flowers.

Favorite son of Khaniá was Eleutherios Venizelos, World War I statesman and confidant of Woodrow Wilson. In memory of the Cretan diplomat his widow has built a splendid stadium, where we saw such athletic contests as the Greeks call "agonies." Well-muscled young men and shapely maids in modish shorts gave the Cretan capital a collegiate air.

In the home of G. S. Naxakis, author and alpinist, I made some Kodachromes of his daughter Iolanthe and her charming friend, "Helen of Troy" Nicolopulo.

#### Within Earshot of Guerrilla War

From peaceful Crete, hungrily anticipating the biggest olive crop on record, I went to the other extreme with a flight to Ioánnina and Kastoria over enemy-held hills. The towns still echo to the sound of civil war, but, cleared of guerrillas, serve as military bases and refugee camps.

Lt. Stephen Merrill, who speaks Greek like a native, accompanied me (page 733). At Ioánnina we were met by ECA field man Mike Adler, brimming over with ideas, who took us to "children's city," feeding station and refugee camp. The Paidoupolis, City of Children, is an all-too-frequent feature of Greek life. But they are wonderful havens for the homeless.

With its high-perched old citadel overlooking a charming lake, Ioánnina is the chief city of Epirus (page 740). From it Greek

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Crete, Where Sea-Kings Reigned," by Agnes N. Stillwell, November, 1943; "Cruising to Crete," by Marthe Oulié and Mariel Jean-Bruthes, February, 1929; and "Sea-Kings of Crete," by James Baikie, January, 1912.





Chris Ware from *Kalamata*

### Greek Army Recruits, Trained by a Kilted British Major, Climb Ropes Like Gymnasts

Ancient Greeks had a word for such a drill—*agonia* (contest or struggle) they called it. Anyone who has seen the contorted faces at the finish of a race will understand the derivation of our word "agony." Americans now guide the Greeks on strategic levels, but Britons remain on the job as army instructors.

Commandos make forays against ambushed mountaineers. To it flocked refugees and prisoners of war. Some are already homeward bound to their ruined villages.

In the prison courtyard we talked with some Amazons who had served with the guerrillas, but now were about to go home. A few had joined up of their own accord, but most were forced into guerrilla life.

In a splendid old estate the girls of the National Girls Orphanage were being taught to embroider, make dresses, cook, and keep house. The discipline and spirit were splendid, and a small scarf I bought carries happy memories.

Past a spot where guerrillas had held up

a bus two days before, we rode down to see an experiment station where cattle herds are being improved through artificial insemination and swamplands reclaimed by draining.

The women were about to lunch, but I asked one of them to go back to weeding mangel-wurzels long enough for a picture.

"Count on a *Geographic* man to pick a pretty one," quipped Adler, after an appraising look.

Steve and I visited the museum in Ali Pasha's mosque, watched hundreds of hungry folk stand in line for a gob of macaroni and cheese, and rowed to an out-of-this-world island where half a dozen medieval monasteries dream away the hours.





### Young Athenians Know General Marshall as the Architect of Their Future

Most Greeks realize that their hope for a free nation depends on the European Recovery Program outlined by former Secretary Marshall in 1947. Thousands stop daily on Winston Churchill Street to scan a billboard showing how the Economic Cooperation Administration helps their country. About \$1.10 a year from each American provides \$23 in aid for every Greek.

In one of them, by the flickering light of an altar candle, a wrinkled caretaker revealed one saint after another, while, high in the dome, a shadowy Pantocrator looked down (page 742).

### Ioánnina Mud Stops U. S. Mules

With a farewell roar to Ioánnina our plane was off across mountains where guerrillas still hold out and occasionally take pot shots at pilots. From the air one can see why a six-by-six truck is useless for mountain warfare.

Not a road, not a path, not a spring or shelter could we see. Texas and Missouri mules can slog through snow and gooey mud; but within a few yards of the road they might as well be wearing high heels. This is a land of goats and mountain men.

In such mountains mechanized troops are outmaneuvered, much as were the crusading knights beside Galilee, when Saladin's light horse ran circles about them, and the sun of the Holy Land roasted European chivalry in its own breastplates. Mountain warfare is easy—to the man who isn't there. Recent victories have been dearly bought.

Mention "Kastoria" in Manhattan's fur district, or "New York" in Kastoria, and you are sure of an audience. Many highly skilled fur craftsmen learned their cunning in that lake-girt city near Albania (page 756).

Lieutenant Merrill and I drove up with our chins between our knees, for the jeep floor was heavily sandbagged against land mines. The King and Queen and Prime Minister Sophoulis had been here before us.





### A Many-paned Window on United States Life Is the American Library in Athens

Hundreds of Greeks, to whom America is a magic word, go each week to the United States Information Service Library to read American magazines and reference books. Murals picture Jefferson Memorial at Washington, D. C., and other American scenes. Prize-winning photographs line the walls. A Greek Orthodox abbot consults assistant librarian Alice Crowley (page 714).

Mr. Vasílios Mellides, their host and ours, commutes between Kastoria and New York.

In a fine old house, its sagging floors and landscape-painted walls a relic of Turkish days, we saw how tiny scraps of fur, rejected by Manhattan's well-paid experts, are coaxed together into lustrous sheets, to be fashioned into a woman's coat.

The pieces of which it is made may have come from widely scattered flocks in Afghanistan or Persia (Iran). They may have crossed back and forth between Kastoria and Fifth Avenue or Michigan Boulevard. But a rich lining hides the evidences of toil and skill, and the surface seems smoother and better matched than if made of whole skins.

The little girl who modeled for me caressed the rich mosaic of worthless scraps.

Perspiring profusely, I climbed into a plane to Athens. While shivering in my trench coat, high above the clouds, I decided to go to bed. But Laird Archer, Director of the Near East Foundation in Greece, invited me out.

Thus, quite by chance, I met Queen Frederika, German-born darling of wounded soldiers and little mother of thousands of orphaned children. Some of the children don't know whether they are orphans or not. Some do, all too well, for they were there when death struck.

While Mr. Archer paid a name-day call on Princess Helen, aunt of King Paul and mother of the Duchess of Kent, I waited outside, feeling that sports coat and slacks were unsuitable. But his forthright hostess insisted that I "stop being silly and come in."





ARMY ENGINEERS, U. S. ARMY ENGINEERS

### Down the Hopper, Below Water, Goes Concrete to Restore Piræus Harbor

Germans blew up more than a mile of quay, sank cranes and hulks where they would do the most harm. United States Army Engineers began directing repairs in 1947 (opposite page). Today the port and dry docks are as good as ever, but landing costs are high because, instead of being unloaded directly on the quay, most cargoes are transferred to lighters which carry them to shore. So vital was the port of Piræus to ancient Athens that the two cities were connected by the Long Walls, fortified highways, long since quarried away.



Old friends who had helped me photograph the Delphic Festival in 1930\* at once made me feel at home. Then I was escorted to a chair in the garden beside the glamorous and dynamic Queen of the Hellenes.

#### Plebeian Pup Licks Royal Sherbet

Her Majesty was telling of a school in Lérós in the Dodecanese† where young bandits are trained for a better life and where the newly freed islanders entrusted the Greek flag to these young men.

A guest had left his delicate crystal glass of sherbet on a stone bench and a pup was licking up the royal refreshments. Queen Frederika's dark eyes twinkled at this mischief, but it failed to interrupt her discourse.

Then cordially the Queen turned to me.

"I hope you will visit some of my camps," said this beloved mother, who has added so many foster children to her own (page 712).

"But I have, Your Majesty, at Ioannina. We visited the dormitory at the slumber hour. When I tried to photograph one bright girl, framed in the end of her double-decked bunk, I found nearly a dozen happy faces in my finder (page 744). Incidentally, you are ministering to my happiness also."

"How?" she asked.

"I am fond of music, operetta, theater, and cinema. But when I first returned to Athens and thought how cruelly Greece had suffered, it seemed selfish for me to enjoy such pleasures in a land where there is so much want. Then I found out what the Queen's Fund tax ticket is and that I had the privilege of adding my two cents' worth to your charity. With that small ticket, which added so little to the cost, I felt that I had an invisible little guest beside me. After that, even a twice-seen movie seemed good."

To King Paul I risked an informal approach:

"You have had my sympathy, Your Majesty, ever since I saw you stand in the sun outside the new Fisheries Laboratory during an interminable speech of welcome tendered you. As it dragged on, I asked a friend if he would like to be a king. He thought not!"

The tall, quiet ruler offered me a sherbet, introduced me to his friends, and laughed. "It's nice to have one's problems understood," he said.

I came away admiring the simplicity and democracy of these hard-worked rulers, on whose common sense so much depends.

Some schoolboy chestnuts, like Thermopylae, resist time's changes. Railroad builders, tunneling through the hills and tossing the 1,100-foot Brállos bridge across a wild gorge,

long since made a museum piece out of Leonidas's once-significant pass. As the Paris-Athens sleepers of the Simplon Orient Express crawled toward Attica, 4,500-foot Mount Kalidhromos hid Thermopylae from the passengers.

During World War II, British and German experts in dynamite and destruction, by wrecking the modern substitutes for Thermopylae's bottleneck, turned back the pages of history to where it was when Xerxes' Persians forced the pass, more than 2,400 years ago.

My friend Al Cook had spent months, dodging land mines and toiling in heat and snow, to record the proud achievements of our Corps of Engineers. Besides rebuilding Brállos bridge and tunnels, they built 900 miles of new road, restored the ports of Piraeus (opposite page), Vólos, and Salonika, and re-opened the Corinth Canal (page 734). Thanks to them, the caissons are again rolling along in Greece.

Mr. Cook generously gave me some of his photographs of the reopening of Brállos bridge on April 14 of this year (page 715). Soon after that, a special train, cautiously pushing a string of flats (in case some saboteur got careless with his land mines), crossed the rebuilt structure. From where ECA man Walter E. Packard and I watched it, the train was a toy and the mighty new bridge a spiderweb, almost lost in an immensity of mountain and gorge.

#### Vacant Land a Challenge

Mr. Packard, a drainage and irrigation expert, was inducing rice to grow on alkali soil where nothing grew before.

The Sperkhiós River, now a destructive torrent, now a sun-bleached river bed, has eroded fields, spread miasmatic swamps, and built up three miles of alkali flats between Thermopylae and the gulf. So much vacant land, in a country which must import food or starve, is a challenge to an agriculturist (page 737).

Ultimately, the wily Sperkhiós may be dammed. Already, drainage ditches and irrigation canals are putting the water in its proper place. But we came to see a 100-acre experiment on fields flooded by motor-driven pumps.

The tender rice, planted only a month be-

\* See "Festival Days on the Slopes of Mount Parnassus," 14 ill. in color by Maynard Owen Williams, *NATIONAL GEOGRAPHIC MAGAZINE*, December, 1930.

† See "Rhodes, and Italy's Aegean Islands," by Dorothy Hosmer, *NATIONAL GEOGRAPHIC MAGAZINE*, April, 1941.





### Water! The Magic Word Lures Hundreds as an Irrigation System Opens Near Flóka

This small spillway is part of a \$125,000 project irrigating 1,550 acres. Pumps lift water 50 feet from the Alóös, largest river in the Peloponnese. Alpheus, for whom it was named, was the god who became a river to pursue the fountain nymph Arethusa under the sea to Sicily.

fore, bore little resemblance to the lush paddy fields of Java. But after flying above it in a small plane, Mr. Packard reports the rice crop looks so good that the 40 cooperating farmers expect 60 bushels to the acre.

#### Greece May Grow Own Rice

Ultimately, on 25,000 to 30,000 acres of now worthless land, Greece may grow all the rice she needs. One rice farmer has already promised to plant 1,000 acres of rice in 1950 and is being helped with the necessary machinery.

Italian bombers turned Lamia's cinemas into open-air movies. Then came 32,000

refugees to crowd a city that housed 20,000 before the war. Commercial trucks roar through town. Big Missouri mules, riding to battle and so hungry that only the Army can afford to feed the larger ones, stick out their number-branded necks.

Women stagger along, bent low under tight bags of flour or unkempt bundles of brushwood for their ovens. Grown men juggle toy-sized coffee cups in the shade.

Around the town are the Quonset huts and shanty towns of the refugees. A man who builds his own shelter of odds and ends fares better than those who share a single hut, sometimes without even a curtain between families.



Close to camp is the compound of the Mechanical Cultivation Service, whose machines do large-scale plowing for small-scale farmers.

My friend, J. Bernard Wyckoff, knows of no argument after one of these behemoths has wiped out former boundary lines.

"Shows that the Greek farmer has learned to live with his neighbors," he gloated.

Wyckoff has the complex ECA job of selling what farmers produce. In a hungry land, that should be easy. But the cost of production is higher than the world price. Before they left, the Germans wrecked ports, roads, and bridges; they also deliberately wrecked the drachma.

This year there was hardly a bankbook in Greece. Savings, bonds, and the like were wiped out. Current income, higher than ever, buys little. To have a shirt laundered and starched cost 9,600 drachmas. But a haircut was only 4,000. To change drachmas into cents, I cut off two zeros—4,000 drachmas = 40 cents. In September the drachma was further devalued.

American wheat can be landed in Greece at half the cost of native wheat. ECA experts now sell it on board ship, so that millers will help lower the exorbitant landing charges. But Wyckoff and his friends forced the Government into a two-night debate in their successful effort to pay the small farmer more for his first 25 bushels of wheat.

Wyckoff also brought silk producers and manufacturers together so that this year's cocoons can be used, instead of stored. Mrs. Muriel King, ECA fashion expert, who is selling Greek peasant skirts to Texas girls, is selecting new designs and seeking profitable markets for the excellent Greek silks which, because of the cost of production, are luxury items.



The Author Sits in the Cradle of Hercules

Homer sang of "wall-girl" Tiryns, and Pausanias, geographer and traveler, likened its walls to Egypt's Pyramids. Legend says its ramparts were built by the Cyclops before Hercules was born in Tiryns. Warriors from Argos destroyed the city in 468 B. C. This arched gallery, surviving out of the Mycenaean Age, served as a sheepfold until archaeologists cleared away the debris. Light glints against rocks rubbed smooth by centuries of woolly coats.



Every perplexing problem is complicated by another. How to grow rice on alkali land is one; how to sell it in competition with gift rice from abroad is another. Shut off the imports? Children starve. Force the farmer to sell at less than cost? A nation starves.

Before the war, the average annual income per inhabitant in Greece was \$80. In some ECA countries the victorious enemy saved all factories possible to work for him. In Greece, friend and foe outdid each other in wrecking everything in sight.

The once-profitable Greek merchant marine was decimated. Income from tourists and remittances from relatives in America are reduced. There is little, if anything, that Greece can do better than any other nation. But the matchless treasures of antiquity are important assets to attract tourist dollars.

#### Ancient Treasures to Lure Dollars

The ECA is paying refugee laborers to restore the Stoa of Attalus, which once looked down on the Panathenaic procession, in which sturdy athletes and pretty maidens, pictured to this day in priceless marbles, annually escorted a sacred robe to Athena. This ancient covered portico will serve as a show place for treasures found while excavating the Athenian Agora, between the Acropolis and Hephaesteion. That makes the American taxpayer a partner of John D. Rockefeller, Jr., who long financed the Agora "digs" of the American School of Classical Studies at Athens.

In the near-by Painted Stoa, another ancient portico whose habitués were the Stoics, slavery was condemned 2,000 years before Abraham Lincoln. To this meeting place came philosophers from a world awakened by the tramp of Alexander's troops to hear the teachings of Zeno, founder of the Stoic school.

Farther away is the best preserved of all Greek temples. Its columns still stand. Its name has been lost.

To bus and train passengers it is known as the Thesaeion. Scholars call it the Hephaesteion, after the lame blacksmith whose followers have their forges close by. Even in Greece, Hephaestus, handy man of the gods, goes by his Latin name as *Vulcan-izer* of automobile tires. But Mr. Homer A. Thompson, distinguished archeologist, has given added proof that this temple also honored Heracles, or Hercules.

Mr. Thompson describes how a sculptured torso, two female figures, a headless goddess, one slender hoof of a horse, and some obscure depressions and spike holes were clues to the theme of the ruined pediment.

No one, after hearing him, doubts that the scene was that of the ceremonies honoring Heracles for bringing back the golden apples of the Hesperides. Vase paintings indicate that, in this delightful labor, at least, the ancient strong man used charm rather than a club.

#### ECA Wives Turn Archeologists

On June 26, 1949, ECA wives hit a minor archeological jack pot in the digs. Alerted by two of them, I took my camera to their impromptu date with the ninth century, B. C., set for 4 p. m.

A 32-inch burial jar had been uncovered in the Agora and the top dusted off. Its contents, if any, were untouched when we arrived.

Archeologist Margaret Crosby, in a wide straw hat and slacks, warned of possible disappointment.

"When an archeologist calls his shot, he often misses."

Mrs. Evelyn Smithson, Bryn Mawr graduate but a freshman at field work, presided.

Inside a circle of skirts, nylons, and wedgies, Greek diggers slowly removed the 2,800-year-old debris. After two graceful vases had been removed, the jar was detached from its bed, swaddled in burlap, and lugged to the Agora museum courtyard.

In the jar, under the cranium of a ten-month-old child, were half a dozen delicate vases, all unbroken and each distinctive—a very successful find.

In his museum workshop, anthropologist J. Lawrence Angel was engaged in sticking together prehistoric skulls. His researches indicate that if the ancient and modern Greeks are not of the same race, they could be, as far as skulls go.

One ancient skull was in such perfect shape that the explanation seemed incredible:

"Must have been thrown down a well. Water doesn't rot a skull. It is alternate wetting and drying that turns poor Yorick to dust."

Homer adds evidence that characteristics, as well as skull structure, persist.

"We lost our bearings, as Zeus, I suppose, intended we should," said the dauntless Odysseus, alibiing to Alcinoüs. In Polyphemus's cave his men were "paralyzed by a sense of utter helplessness." Fatalism and a sense of helplessness are still problems.

#### A 1,000-mile Jeep Jounce

Merrill, who had a leave coming, has relatives in the Peloponnesus. I could get a jeep. He would act as mentor. So we had a wonderful 1,000-mile jeep jounce through territory





### Hungry Children of Ágras Get a Dole of Hot, Sweetened Milk

The author saw no outright starvation in Greece, but found malnutrition woefully common. These pinched, unhappy faces show that the station, a unit of the United Nations International Children's Emergency Fund, had been open only a few weeks. American engineers working in Ágras started the project by giving food to their undernourished young friends (pages 733 and 743).

which a few weeks before had been in bandit hands.

Along the green-and-purple Saronic Gulf (Saronikós Kóipos) we rode, crossed the Corinth Canal into the Isle of Pelops, and climbed to Mycenae's Lion Gate.

We had lunch at the Restaurant of the Beautiful Helen, where archeologists lived for generations. The white-haired host showed me an original edition of C. Tsountas' *The Mycenaean Age*, on J. L. Manatt's translation of which my father had lent a hand. In the guest book, with the pride of a host and the cynicism of a Greek, he pointed out the flamboyant signatures of Goering, Goebbels, and Himmler—"big shots" no more.

Goering's one-time chauffeur added a side-light:

"That Goering! I take him everywhere and Greece pay the bills. He look at the tomb of Agamemnon and the Lion Gate. Everywhere he say, 'Lovely, lovely, lovely.' He very polite man. But pretty soon his dive bombers speak different. They say, 'Boom, boom, boom'—Nazi way of saying 'Thank you for hospitality!'"

### Some Návrion "Firsts"

After visiting the great-stoned galleries of Tiryns (page 723) and the well-preserved theater at Epidaurus, we slept at Nauplia (Návrion), a port coveted and held by many. A local legend sounds like civic propaganda. Here, it says, man first learned to sail, to build lighthouses, to use an alphabet, and to shoot crabs!



A fine new road hairpins over the hills between Argolis and Arcadia. Near Akhladhókambos we passed a series of rock crushers, screens, rock heater, and asphalt mixer.

Here busy road builders are helping motor traffic to triumph over the very hills which yield the stone.

Some new roads were built when war demanded haste, and its consequent waste.

"You might as well toss blacktop into the fields as to try to build a road in a driving rain, but that's what we did," one frank engineer told me. The new road near Akhladhókambos is so good that truck drivers can't wait for it to cool.

Batteries of crushers "made little ones out of big ones." Bulldozers shoved the graded stone toward the chutes. High-pressure flames dried and heated the stone, which was then mixed with asphalt and emptied into trucks. Two loads a minute set out for the massive machine which rolls slowly ahead over a bad road and leaves a good road behind it.

At the pleasant little city of Tripolis, Brig. Gen. Thomas Pentzopoulos, who had freed his area of guerrillas, arranged for a scout car to accompany our jeep through Taygetos. Across this nearly 8,000-foot barrier the spartan Spartans, 2,500 years ago, enslaved rich Messenia. On the mountain slopes defective babies were left to die.

Over the makeshift but adequate road, which the Army pushed through while fighting off guerrillas, a constant stream of heavy trucks was using this unfinished short cut between Messenia and Laconia.

#### Bashful Bandit Surrenders

Near the top of the pass we saw the surrender of a "bandit"—a fearless but bashful lad with a most antiquated machine gun.

His brother, hating those tangible embodiments of all Greek alibis, "the politicians," had "gone Communist." When something happened to him, his inoffensive brother surrendered, perhaps out of loneliness. As he was interrogated by his captors, there was no ill will on either side.

When Spartan warriors conquered the Messenian plain, Sparta became the most powerful city-state in Greece. Now American draglines are reclaiming worthless portions of once-rich Messenia.

We saw oxen dragging the rice fields in true Oriental style, and Kalamata's fruit and vegetable market oozed vitamins.

As we approached Arfará, I asked my mentor if he had let his relatives know he was coming.

"If I had, they'd have killed the fatted calf," he replied, chuckling.

In a simple but most hospitable home my companion had a small youngster on his lap most of the time. Four delightful daughters, after helping prepare the feast, put on their prettiest dresses, gifts from America.

Anna, the oldest, is a dressmaker, and Io and Maria help. Panayiota prefers gardening. Such charm, in this dusty village, was like the flash of butterflies; but I slipped away to the village school, crowded and understaffed, where the village priest and schoolmaster expressed his thanks for milk from America.

#### Women and Donkeys Carry Water

Despite Arfará's position between two mountain streams, its water is brought in by donkeys or women. One Greek American said that he has to walk down to the river to wash his feet and when he gets back they're dirty again.

"Everybody goes to church," I reminded him. "Why don't you gather the men together some Sunday after service, go up one of the streams, sink a wine cask, get some pipe, and have yourselves a water system?"

"The politicians would not like it."

"Invite 'em up, have them inspect the wine cask, and push 'em in."

When I mentioned the matter to an ECA expert, he took down the name of Arfará and said:

"Maybe we can do something. If we start, your friend will help. But these people have had some awful wallops and need encouragement." Cooperation is ECA's middle name. Maybe running water *will* come to Arfará.

Our lunch was ample, delicious, and gay. Of Merrill's cousins I retain many pleasant memories and one poignant one.

Taking Merrill aside, our host pleaded, "See if my brother won't have one of my girls go to America."

I thought what a blessing such a neat little housekeeper, cook, and dressmaker could be to a tired American housewife. But the Greek quota of 310 annually is filled for years to come.

Back in Tripolis, after a dipsy-doodle road, we were guests at an outdoor dinner given by General Pentzopoulos. A Gypsy singer had been asked to bring her guitar. As one delicious course followed another, her nostalgic melodies, now a moan, now a cry of defiance, colored our conversation.

The maid of Athens beside me was novelist, painter, classical dancer, and very good company. Across the table a bald general echoed each melody of the Gypsy guitar.





By MICHAEL GOODMAN, ARTIST

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Continued by M. ANTHONY FERRARI

# Dark-eyed Maids in Ancestral Dress Roll Back the Years. Medieval Greece Stands Revealed

Precious hand embroidery, diaphanous voile, and heavy metal ornamentation emerge only on holidays. War has made savage inroads on such heirlooms. Many villages have distinctive costumes; this one identifies Trikeri.





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### Refugee Children, Greece's Future, Parade Beneath the Colonnaded Parthenon, Crowning Glory of Her Past

These little ones, coming from areas laid waste by Communist guerrillas, are wards of Queen Frederika, who has set up children's camps across the country. Not was but since "devastated" the slope below the templed Acropolis. American archeologists, denouncing modern houses, laid bare the market place of classic Athens.



## Greece Wears a Yankee Look. Peddler's Stand and Mule Cart Bear Soap To Soften Beards, Canned Milk To Harden Bones

After V-E Day a life-and-death struggle with guerrillas paralyzed Greek economy. The United States, to ease its war-time ally from Communist control, intervened with food, arms, and technical assistance. ECA sends urgent necessities (right), but not luxury goods (left). Currency's inflation is illustrated by the 2,500 drachmas demanded for a 45-cent wire. The power drachma was worth about one cent.

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Redemptive for Mankind from William





# Skirted Evzones Dress Like Ballerinas for Lightning Lunges

Long ago the Greek mountaineer, like the Scots Highlander, adopted a kilt to ease his strides through the crags. This skirt became the national costume. Among civilians only a few shepherds wear the kilt nowadays, but the tall, handsome Evzones, elite of the Greek Army, retain a stylized version for dress occasions.

Forty yards of material go into the Evzone's pleated fustanella, or skirt, which has yards of belled sleeves fallow from his embroidered vest. Tasseled garlands below the knees anchor his waist-high tights. A tasseled falls from his felt cap, and heavy boots bloom with pom-poms at the toes.

As members of the King's Guard Battalion, these Evzones stand at attention on a stairway wall leading from the House of Parliament to the Tomb of the Unknown Soldier, Athens.

Shields show Medusa, Minerva, and an Army emblem. Inscriptions name Italian War battles fought by Greeks.

Greeks still use the classic alphabet (with a few changes), and this very script, modified by Rome, has been handed down to us. English is sprinkled with Greek words. Our science, literature, and theater owe their origins to ancient Greece.

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Redrawn by H. Arthur Stewart







## Evzones Create a Shadow Pattern Marching Past Constitution Square

Constitution Square gives the traveler a front window into Athenian life. Here when day's work is done the coffee drinkers gather, and far into the night their conversation flows.

Tables and chairs are set up by concessionaires operating shops beyond the square. Each handful of black coffee, each weary slice of pastry, each dripping cone of ice cream has to be carried into the plaza by a waiter dodging street traffic. In these lean days when not many Athenians can afford sweets, some call for plain water, for which they leave a small tip.

Puffles is the meal of the conversation. No one hesitates to criticize his Government. Even during the mild power dictatorship the people were just as outspoken, but no thought police molested them. Today the Greek can denounce, which repelled Persian despotism in 480 B. C., argues as vigorously and as passionately as ever.

Each Sunday morning a platoon of Evzones marches to the Tomb of the Unknown Soldier for a changing of the guard. Their lieutenant is distinguished by his boots and tunic. A Greek private (right) wears the regular uniform.

By National Geographic Society

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### Heavy Marble Columns, Dark Evergreens, White City, and Purple Mountain Compose One of Athens's Loveliest Views

Here the Roman Emperor Hadrian completed the Temple of the Olympian Zeus, one of the three largest shrines in the Greek world. Fifteen of its 104 Corinthian columns still stand. Its profound and silent air of antiquity is sometimes deflected by gangs of boys playing football. Mount Hymettus rises in the background.



## No Sullen Pouts, No Laggard Appetites, but Happy Smiles Greet the Daily Ration of American Milk in Aetfard

Mountainous Greece, which could never afford much food for cows, saw herds grow thinnier as Germany and guerrillas helped themselves. Now the United States and the United Nations serve milk-starved Greek children. The ECA poster tells them how—"Drink milk; it's body-restoring." The American lieutenant builds a special kitchen.

By New York Times Staff Writer, Washington

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Reprinted from the New York Times





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Scapellato to Harvard from Williams

### Greece's Lifeline Is Back on the Job; American Engineers Have Restored the Corinth Canal

To Greece, which has few roads but many miles of shoreline, shipping is vital. Restoring Sifon struck a crippling blow in 1944 when they blocked this 4-mile waterway with landslides and ships. Its reopening in 1948 shortened the Patras-Piraeus route 200 miles. Left: continental Greece; right, the Peloponnese.



## Greeks Are Great Seafarers . . . Trade-Unionists Mass Their Colors Before the Unknown Soldier's Tomb in Athens

Men like Jason explored the Mediterranean and Black Seas in pre-Homeric times. Athenian naval power saved Western civilization at the Battle of Salamis. This sailor is attached to the Royal Navy's *Achelon*. . . Every union has its patron saint. Slaughterhouse workers here honor Demetrios, who, like Saint George, spurs a dragon.

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Kindnesses to Margaret from William







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The

Rollins to Margaret Owen Williams

## So Peaceful Seems Kastoria Between Lake and Mountain that No One Would Guess Its Days of Deadly Fear

Communist guerrillas, lacking a capital, undertook a major campaign to capture the city as their base. Driven back to the Albanian border, they long remained a threat. Greece's far industry has headquarters here. Not a few New York furriers hail from Kastoria.



## Goats, Having Eaten Greece's Young Forests, Denuded Mountains, and Despoiled Farms, Here Graze a Wasteland

Close to Thermopylae Pass, where Leonidas stood against the Persians in 480 B. C., the Sperchios River has built up an alluvial plain. With the help of American experts, these alkali flats are being converted into rice land. Goats are milk, cheese, wool, and leather to the shepherd; he resorts every effort to curb them.

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Photomount by Richard Drew Williams







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Kathimerini of Athens from 1940

On Makronisi, an Ideological Proving Ground, the Greek Army Turns Communist Sympathizers into Fighting Patriots

This island, uninhabited and waterless until recently, makes an ideal camp. Left-wing deviants, who once plagued the Government with demands, here get an ideological nation into Greece's noblest traditions. The First Company gave this welcome to an American delegation.



## Greece's Crown and Shield (Left) and Battle Flag Are Stoutly Guarded by the Enemies Reformed on Makronisi

Palatines composed their own songs, wrote their own plays. They bear lectures by their country's finest academic minds. No one scolds or argues; the men remain free to believe as they please. But, of the first 21,500 trained here, 7,500 went to the front lines, some to fight against former comrades in arms, a number won promotions and citations for bravery. Many others returned to civil life. Eight hundred were classified as incorrigible. Maj. George Trantoulis here addresses his men.

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Reformation for Macedonia and Thrace







By National Geographic Society

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Illustration by Margaret Brown Williams

### **Ioannina, Which Seems To Sleep in the Sun, Actually Swarms with Refugees, Deadly Battles Have Ravaged Its Countryside**

The crumbling citadel is crowned by the former mosque of Ali Pasha, a tyrannical governor during the 170-year Turkish occupation. All, ruling like a feudal baron, defied Ottoman armies and Greek patriots alike. Troops of the Sultan finally killed him. Legend says he buried a golden treasure; a few Greeks still dream of finding it.



Sturdy Greek Women, Tilling the Soil and Building Roads, Work Like Trojans and, on Occasion, Fight Like Amazons

Women drove ammunition caravans to front lines in 1941; guerrillas use some as troops. Land is so poor that women, old men, and children must toil to bring in the harvest. Here and there wooden plows and broad harrows still break the earth. Denuded mountains are tiny skeletons (right).

At National Geographic Society



Top photograph by Margaret Bryan Williams







# **A Wrinkled Sexton Lights a Medieval Monastery: Byzantine Saints Spring Out of Darkness**

In one convent the author saw Plato, Aristotle, and Thucydides, Greece's great pre-Christian scholars, pictured on walls usually reserved for saints. These figures, seen near Ioannina, represent Mercurius, Iacobus, and Elias.



Motoring to Kalávrita, we came to Kato Klitoria, 85 percent destroyed. But the town ignores its plight. Backgammon players offered us coffee as if they were in a swank club. Kids came back from school past a headless Roman statue, no more ruined than the town.

In the Monastery of Ayios Lávtros I found my 20-year-old signature in the guest book and again photographed the religious banner which Germanos, Archbishop of Patras, raised in revolt against the Turks on March 25, 1821.

I had remembered the City of Beautiful Fountains (Kalá Vrita) as a place of leisure, the sound of church bells, and peace. But German and guerrilla changed all that.

A small white marker in a hillside meadow shows where the Germans machine-gunned approximately 1,100 Kalávritans on December 13, 1943. Later, guerrillas burned the town.\*

Part of my bedroom wall was gone. My bed was hard. The only wash place was the drippy faucet of the fire-wrecked kitchen. Asking myself why a lover of comfort persists in being a wanderer over the face of the earth, I slept better than in Athens.

We jeeped down to Patras (Pátrai) along the oleander-tinted coast of north Peloponnesus; and back to Old Corinth's ruins, which St. Paul knew; and to Athens, where he preached.

#### Harnessing Edhessa's Water

To see one of the engineering projects designed to spread light, power, and irrigation, and save coal, I flew north to Salonika, city of the Thessalonians, and motored up to the waterfalls of Edhessa, once the capital for Philip of Macedonia.

Here, in a magnificent amphitheater, an assassin's dagger, deadlier than Demosthenes' philippics, laid Alexander's father low. But of more present importance is the fact that Edhessa is what its Slavic name suggests: Vodena, Place of Water.

The city peers over the edge of a 250-foot cliff, overlooking a wide and fruitful valley. From the sharp edge of town, sparkling waterfalls seem like wind-blown lace, their beauty soon to be sacrificed to hydroelectric power.

At Ágras, higher up the valley, Ebasco Services, Inc., engineers are cutting a core to see how much rock work will be involved in sinking a 1,200-foot tunnel and building a powerhouse deep down in the earth. From Ágras the water will flow under Edhessa and be distributed through irrigation ditches in the valley.

As the hard-boiled drillers worked, pinched-faced youngsters came to watch. Actually soft-hearted, the men asked why they could

not set up a feeding station under the supervision of the United Nations International Children's Emergency Fund. With that much interest shown, it was a case of no sooner said than done. Now, along with telling how many feet of travertine core the day's work has produced, the men boast of how much brighter the kids' eyes are (pages 725 and 733).

#### In Macedonia "Farming Country"

Unlike much of Greece, Macedonia is "farming country." In a Salonika suburb Charlie House is carrying on the world-famous American Farm School started by his father. West of the city, the Foundation Company, of New York, using giant American machines, transformed mosquito swamps into prosperous farms. During three months in Greece I did not hear a single mosquito.

I wanted to see Slavic-speaking Greeks re-occupy their villages near the Yugoslav frontier. But another push was on. Military trucks crowded the roads. So we sped back over a splendidly repaved portion of the Via Egnatia, ancient highway from Durrës to Byzantium.

Some ancient stones around "Alexander's Fountain" mark the site of Pella.

Seeking new worlds to conquer and divinity in Egypt, only to find premature death by the waters of Babylon, Alexander turned his back on Pella, and it looks it. Yet here Euripides wrote some of his famous plays.

In the plain near vanished Pella threshing crews were at work. Power stackers smudged the blue sky with golden chaff while the grain filled fat homespun sacks. Since refugees from Anatolia† arrived in 1923 and swamps were drained, this part of Macedonia has become a bread basket.

With Charles Schermerhorn, a child-feeding expert with the United Nations, I visited some miserable villages where children had not yet experienced the benefits of his work. Our lunch, in a provincial "country store," consisted of cucumbers, good peasant bread, and six fresh, tasty eggs apiece.

#### The Hospitality of the Poor

To eat so beautifully in so poor a village seemed sinful. But one cannot refuse the hospitality of the poor.

Our visit was not entirely a drain on the country, for my companion arranged for feeding committees and promised some sugar to

\* See "Erosion, Trojan Horse of Greece," by F. C. Renner, NATIONAL GEOGRAPHIC MAGAZINE, December, 1947.

† See "History's Greatest Trek," by Melville Chater, NATIONAL GEOGRAPHIC MAGAZINE, November, 1923.





### The Photographer Aimed at One Model. Up Popped Ten Troubled Heads!

Dr. Williams arrived in the Queen's Fand Camp in Ioannina just at the slumber hour. Starting to picture one child in her double-deck bunk, he got ten times what he bargained for. When he departed, the little refugees clapped hands and shouted "Zito!" (Hail), giving him the tribute they wanted to pay to all Americans. Their parents are dead, lost, or captured in the civil war (page 721).

sweetened hot milk and add energy to youngsters who sadly need it.

Thessaloniki, where Paul preached and Atatürk was born, owes much of its modernity to the devastating fire of 1917.

Contrary to the practice at Piraeus, a much more expensive port (page 720), ships unload directly onto shore.

A cheap and efficient port at Salonika may eventually serve the Balkans as well as lessen overcentralization at Athens, rich man's playground in a poor man's land.

When we learned that the Mission plane had canceled its flight, I had only ten minutes to book a seat by TAE.

### Trained ECA Men from American Colleges

But for Robert College graduate Alexander Michaelides, I would not have made it. But long before our Government became so interested in Near East problems, American schools such as Athens College, Anatolia College, and Robert College had been training men for just such work as the ECA is doing. The Robert College man turned me over to an Anatolia College man, and I was off in a rush.

"Tomorrow I'll be at your alma mater, beside the Bosphorus," I called to Michaelides as our bus pulled away.

The four-hour flight I had so often made from Athens to Istanbul is now done in two. But no longer does one look down on the Dardanelles, or on many-layered Troy, scene of Homer's epic tales.

Beyond the island-dotted Aegean lay Hellas, where the ECA, with ever-increasing knowledge and skill, is carrying on. But, for the time at least, my Grecian days were done.

Remembering the whitewashed slogans on Makronisi—"Hail to Hellas!" I breathed an answering "Hail!"

For additional articles on Greece, see "NATIONAL GEOGRAPHIC MAGAZINE Cumulative Index, 1899-1948," especially the following: "Modern Odyssey in Classic Lands," March, 1940; "New Greece, the Centenarian, Forges Ahead," December, 1930; and "Seeing 3,000 Years of History in Four Hours," December, 1928, all by Maynard Owen Williams; also "Greece—the Birthplace of Science and Free Speech," by Richard Stillwell, and "The Greek Way," by Edith Hamilton, both in March, 1944; "Classic Greece Merges into 1941 News," 12 illus., January, 1941; "Glory That Was Greece," by Alexander Wilbourne Weddell, December, 1922.



# Exploring Stone Age Arnhem Land

By CHARLES P. MOUNTFORD

Leader of the National Geographic Society-Smithsonian Institution Expedition to Arnhem Land, Australia,  
in cooperation with the Australian Government

*With Illustrations by National Geographic Photographer Howell Walker*

A STRANGE world below our plane unfolded like an ancient chart on weathered parchment. Scattered rains and mist blurred brown watercourses, swathed soggy green plains, and beveled gray edges of sharp escarpments. It seemed almost unfair to fly with such ease over country where so few white men dared to venture on foot. Hundreds of feet above Arnhem Land one could feel its inhospitable vastness and infinite emptiness.

Scarcely scratched by European exploration, Arnhem Land, an aboriginal reserve about the size of Maine, lies in northern Australia (map, pages 748-9). Except for the ever-spreading influence of widely spaced Christian missions, it remains blackfellows' country with a Stone Age look.

Here nomadic natives follow their age-old customs. In small groups they hunt with spears over the black-soil flats, among the monotonous eucalyptus forests, and in steep-walled gorges of the stony plateau. In primitive dugout canoes they fish off the coast, gather food in the swamps, or along the many tidal rivers.

Often the aborigines hold an all-night *corroboree* (tribal song and dance), their painted bodies flashing grotesquely in the firelight. And sometimes their spears fly in a fight to the death over women.

In early April, 1948, two Catalina flying boats moved the majority of our expedition staff from Darwin to Groote Eylandt in the wide Gulf of Carpentaria. A supply ship followed with three more members, the bulk of equipment, and food supplies.\*

## Aborigines Studied in Natural Environment

Ten Australians and five Americans made ours the largest purely scientific expedition ever to take the field in Australia.

Original plans called for a much smaller group. However, through the personal attention of the Commonwealth Minister for Immigration and Information the party expanded; the Honorable Arthur A. Calwell was anxious to further collaboration between the scientists of his country and the visiting ones.

As the story unwinds, you will meet the members; so we won't herd them all on the stage at once (page 760). The National Geo-

graphic Society and the Smithsonian Institution (both of Washington, D. C.) and the Commonwealth Government of Australia sponsored the international expedition, hand-picking their respective representatives for the comprehensive eight-month survey.

Main objectives were to observe the everyday life of Arnhem Land aborigines; try to determine where they originally came from; learn how they coped with their own environment; collect specimens of their material culture, such as spears, throwing sticks, mats, and baskets. No less important was the task of recording mammals, fish, birds, and plants in the region.

The scientific departments helped one another in the field. Naturalists supplied anthropologists with information on the natives' environment, while the nutritional unit judged how well aborigines lived off the country. No other expedition in Australia has embraced so many interlocking branches of anthropology, natural history, and medical research.

## Three Main Bases

We divided our time in the field fairly among three main bases.

Our first camp, at Umbakumba in northern Groote Eylandt, offered an island environment with a generally arid, sandy hinterland.

Secondly, Yirrkala, in the northeast corner of Arnhem Land, let us study life on the sea-coast as well as among fresh-water billabongs (lagoons) and rich eucalyptus forests.

Oenpelli, our final site, was some 40 miles from the sea; here the great stony plateau of Arnhem Land rose abruptly from flood plains where extensive lagoons and marshlands teemed with fish and wildfowl and crocodiles lived in the writhing tidal rivers.

Although among the first areas of Australia discovered, Arnhem Land remains the least-known corner of this island-continent.

As early as 1606 a Dutch East India Company vessel penetrated 300 miles into the huge Gulf of Carpentaria to Cape Keerweer.

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Cruise to Stone Age Arnhem Land," by Howell Walker, September, 1949; "An Arnhem Land Adventure," by Donald F. Thompson, March, 1948; and "Earth's Most Primitive People," by Charles P. Mountford, January, 1946.





### A Bearded Ornithologist, Burning Midnight Oil, Works on a Crested Pelican

By day Herbert G. Deignan, of the Smithsonian Institution, searched Arnhem Land for bird specimens; and late into the night he cleaned his collection (page 736). Here on a sultry night he works outside his tent on his largest prize. Black wings and black tail distinguish the Australian pelican from the North American species. The American-Australian expedition collected, among other things, 850 birds (page 782).

Seventeen years later two more Dutch ships sailed along the same gulf shores. From one, the *Arnhem*, the region took its name.

In 1644 Abel Tasman, still another navigator of the Dutch East India Company, discovered the largest land mass in the Gulf of Carpentaria; hence its name, *Groote Eylandt* (Big Island).

Adverse reports of the country and the waning of Holland's sea power damped Dutch interest in remote southern lands. Save for natives, of course, and occasional Malay fishing fleets, the coast was virtually deserted for the next century and a half.

Then came Matthew Flinders in 1802-3 to spend four months charting and surveying shores of the Gulf of Carpentaria; and he incidentally reported contact with seafaring Malays. Navigators in these waters still use his charts.

Since that master map maker's departure,

the world has heard little about Arnhem Land.

Today this region's aboriginal population numbers about 3,000. Although nomadic, the natives move only in their own tribal territories. Here they guard and worship the spirits of their ancestors, the "dreaming places" of totemic significance. Those of one tribe speak a dialect usually not understood in any other tribal area.

### Living from Day to Day

With a minimum of possessions they live from day to day, campfire to campfire, hand to mouth. Amazingly clever at tracking, they rely upon their skill with a spear to wrest subsistence from country in which any white man on his own would starve.

There is a communal existence; food gathered by the able-bodied is shared by all. No one is born to leadership; experienced old men hold the respect of the tribe and make the



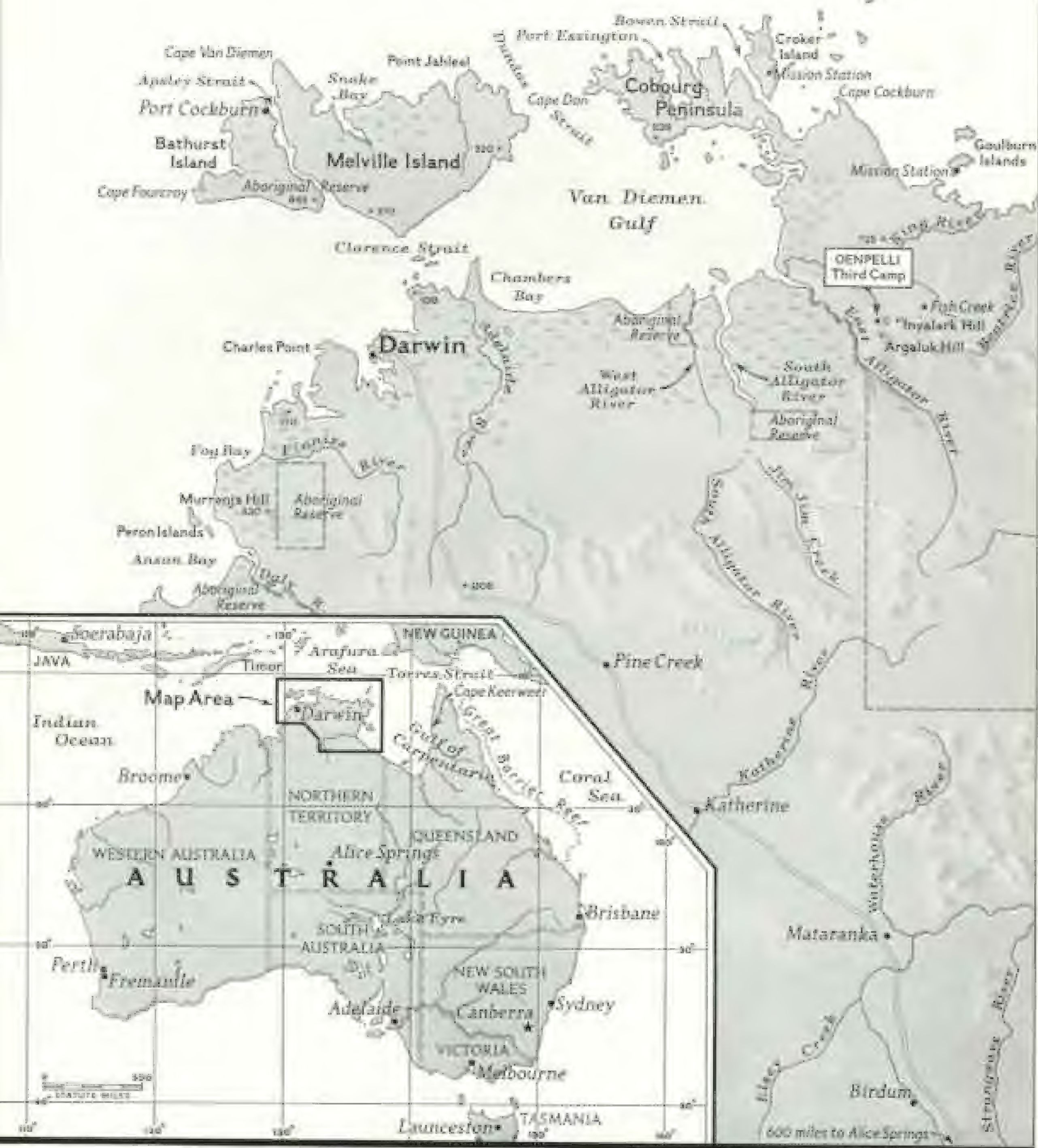


The Expedition's Medico and His Assistant Weigh a Female Patient

Dr. Brian Billington (left) and Kelvin Hodges, a biochemist, both of the Australian Institute of Anatomy, Canberra, set up their dispensary tent near the Oenpelli mission station and examined dozens of natives. Dr. Billington made it a rule to attend to old men first, for they passed judgment on whether he practiced evil magic (page 750). Fortunately, the tests always received their approbation. Some patients developed a taste for cough medicine and kept returning for more after being cured. Oenpelli was the last of three main bases.



# A t r a f u r a



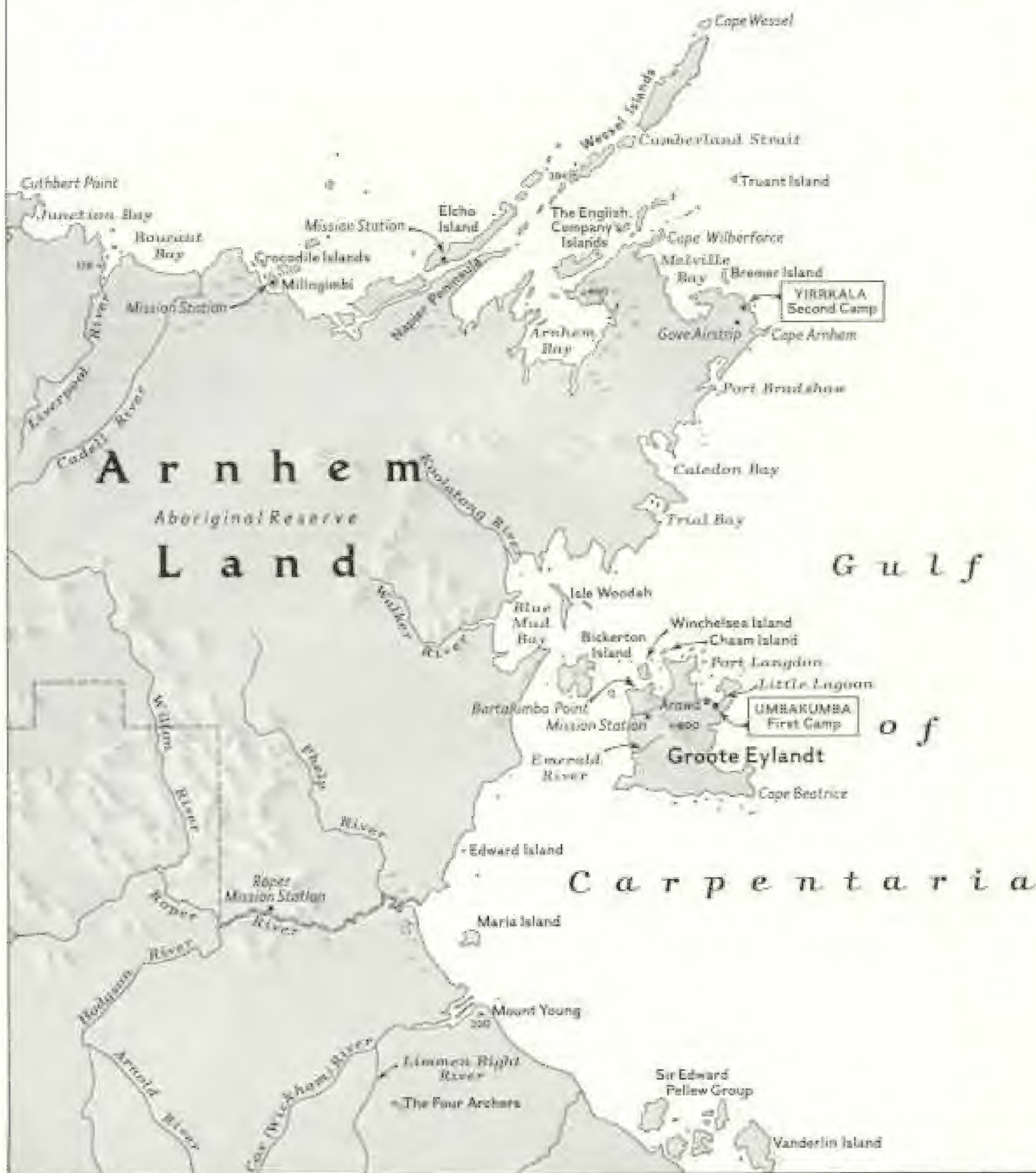
## Arnhem Land Is Set Aside Like an Indian Reservation as an Aborigines' Sanctuary

major decisions. Women generally stay in the background. In their early years children appear hopelessly spoiled through parental indulgence, but with time they learn perforce to conform to their ancient tribal ways.

At Umbakumba, on Groote Eylandt, aborigines helped us pitch our tents on a sand hill beside the native settlement run by Mr.

and Mrs. Fred Gray. Gray generously assigned us a dozen of his best blackfellows to serve as guides, laborers, photographers' models, historians, and artists. Mrs. Gray, through her home and the school she taught, enabled us to make friends with some 50 boys and girls as well as with the exceedingly shy womenfolk (pages 753, 754, and 757).





DRAWN BY HARRY W. FISHER AND IRVIN E. ALTHOFF

## Few White Australians Have Ever Seen the Rugged Face of Their Northern Wilderness

Because the expedition's radio failed, we could not learn the position of the supply ship *Phoenix* en route from Darwin with most of our equipment and much-needed food. Only the mission station, some 40 miles away by trail, kept Groote Eylandt in radio communication with the outside world.

As our food diminished, I planned to walk

to this mission, ascertain the *Phoenix's* whereabouts, and if necessary arrange for emergency stores to be flown in. This was done, and in due course supplies arrived by air.

During our first seven weeks in the field, three of the American staff were not with us. Dr. David H. Johnson and Herbert G. Deigman, both of the Smithsonian, and Howell



Walker of the National Geographic Society had decided to travel aboard the *Phoenix*. At ports of call Johnson and Deignan sought mammals and birds, respectively, and Walker local color.

With us at Umbakumba were the other two Americans: deputy leader Frank M. Setzler, Head Curator of Anthropology of the Smithsonian Institution, and Dr. Robert Miller, ichthyologist of the Smithsonian.

Setzler recorded more than 100 palm- and fingerprints, took hair samples, and made tests of inheritance of taste sensitivity of aborigines in the vicinity. These dermatoglyphic studies are the first to be made of natives in the area; they supplemented data previously gathered on aboriginal physical characteristics.

Frank also completed numerous facial and hand casts of aborigines (page 761). These casts were to be used for the modeling of life-sized groups in the U. S. National Museum at Washington, D. C.

#### "Leaf" Turns into Fish

Miller collected fish by hook, seine, shotgun, night light, and the use of powdered derris root (page 769). Two species particularly interested him: a needlefish, locally known as "long tom," and the mudskipper.

The long tom is a surface feeder, related to the flying fishes. When chased by other sea creatures it rises above the water. With rapid vibrations of its tail and an occasional skip, it can scoot across the surface for 100 yards and remain more or less airborne as long as 15 seconds.

Day and night Miller observed habits of mudskippers. These fish of the goby family are at home along the mud banks of tidal creeks and mangrove swamps. Puffing up their cheeks to provide a supply of oxygen, they can stay out in the air for 15 minutes or more at a time. Their eyes, set on stalks, move independently of each other—an exceptional feature among fish.

Once while studying the mudskippers, Bob noticed what looked like a brown leaf floating in the water. Although there was no breeze or current, this "leaf" obviously moved; yet it in no way resembled a fish. It took all Miller's speed and ingenuity to capture the "leaf fish."

The Australian contingent, too, had gone to work in various fields. One of our two female members, Margaret McArthur, went with aboriginal women into the jungle or along the beaches on food-gathering expeditions. When not occupied with secretarial duties, my wife sometimes accompanied the young nutritionist.

Margaret recorded crude native methods

of using a stick to dig wild yams and other root vegetables; watched their preparation in coals or ashes of smoldering fires; saw girls submerge in swamps to come up with edible lily bulbs; or noted how mothers and children found crabs and oysters at rocky points on the coast. In every instance Margaret weighed the food, putting aside vegetable or fruit specimens to be dried and shipped south for analysis (page 766).

Dr. Brian Billington and biochemist Kelvin Hodges set up their laboratory in an abandoned shed behind the Grays' homestead. Here they examined dozens of natives to ascertain general physical conditions. Naturally shy of such things as hypodermics or blood tests, the aborigines, especially the women, presented problems. Brian always tested the older men first so that they could judge whether or not the white medicos practiced evil magic. Then patients moved more smoothly through the dispensary (pages 747 and 767).

We saw almost nothing of botanist Ray Specht during the daytime. With knapsack and ax he disappeared into the bush soon after breakfast; sometimes turned up for lunch; usually sat up late at night pressing plant specimens.

John Bray and Keith Cordon, cook and quartermaster, respectively, watched short rations get shorter, prayed for the *Phoenix* to arrive, and tried to make bully beef taste unlike bully beef. As honorary entomologist, John collected insects between meals (opposite page). Keith gathered shells along the beaches. Because their principal duties kept them close to the kitchen most of the time, both enlisted the aid of native women and children for field work.

#### Natives Form "Cockroach Committee"

The entomologist's assistants formed what we called the "cockroach committee"; as payment, adults received tobacco, children hard candies.

Keith's helpers carried no stigma, just tins to hold what they gathered; they were similarly rewarded.

Anthropologist Fred McCarthy of Sydney's Australian Museum studied the material culture of Groote Eylandt's aborigines. He watched native craftsmen fashion spears, throwing sticks, boomerangs, baskets, and ceremonial objects (page 773). Spending much time among native families, Fred also inquired into tribal and social organizations, learning who married whom, etc.

As ethnologist, my special interest was in primitive art. Through the kind cooperation





#### When Not Cooking, the Expedition's Chef Collected Insects, Lizards, and Snakes

John Bray signed as camp cook to join the Arnhem Land party as honorary entomologist. At various camps he enlisted "cockroach committees" of women and children to hunt specimens in return for tobacco and candy. Australia's insects, unlike its mammals, did not stagnate as evolution's "living fossils." Many species were borne across seas by winds. Certain species of termites, ants, and mantids are found only "down under."





#### Not an Advertisement; Just His Everyday Suit

Calico is precious stuff on Groote Eylandt. Once empty, a flour sack soon finds another use. Here Nemukwunga, of Umbakumba native settlement, turns the bag into a loincloth (page 733). Before contact with white men, aborigines wore no clothes. Modest bushwomen carry back screens.

of Fred Gray, I had at my disposal several aboriginal artists from his settlement. On bark they painted legendary symbols and figures in various other colors with crude, stubby, stick "brushes." Each painting had a story behind it: the legends I recorded as told me by artists and older tribal members (page 759).

In addition to being the leader of the expedition, I had the responsibilities of film

director. With Peter Bassett-Smith, our very capable cameraman, we were able to record many interesting and previously unknown aspects of aboriginal life.

Peter also operated our wireless, sending messages by Morse code and keeping an ear alert to pick up any pertinent signals.

Before Peter had the expedition radio functioning properly, native runners brought in a dramatic message from Groote mission station: our supply ship *Phoenix* had run aground on a reef somewhere off Australia's north coast. No one seemed to know quite where.

Two days later a message from David Johnson gave the stranded vessel's position and told that passengers and equipment were safe.

Eventually, the *Phoenix* delivered our scientific gear and food in good order. With our party complete and all equipment on hand, the work of the expedition went ahead at full swing.

Various research groups set out for subsidiary camps. Fred Gray's 40-foot motor launch, *Wanderer*, took members to outlying islands and to points along Groote's west coast.

#### Malay Fishing Camps Investigated

At Winchelsea Island Frank Setzler and Fred McCarthy disembarked to carry out archeological investigations at old Malay fishing camps. Margaret McArthur, Ray Specht, and I landed on Bickerton Island. The *Wanderer* then continued southward to Groote mission station, where Brian Billington and Kelvin Hodges conducted a health and nutrition survey. Bob Miller went yet farther south to seek fresh-water fish along the Emerald River.

Margaret McArthur observed a community of six aboriginal families living on Bickerton Island. She found that the men went out every day in their dugout canoes to spear fish and turtles, returning home in the late afternoon to cook and to distribute their bag.

The women roamed through mangrove swamps for giant crabs, over the reefs in search of shellfish, or through eucalyptus forests to dig yams, and gather "sugar bag" (the hive of a small stingless bee) from the hollow trunks or upper branches of trees. Energy expended in extracting the sugar bag, sometimes 40 to 50 feet above the ground, revealed their liking for one of the few sweets in their menu (pages 772 and 773).



At first aborigines were puzzled when Margaret took their food from them, weighed it, then returned it. But finally they became resigned to yet another unaccountable act of the white people.

Bickerton Island, with its mangrove swamps, open eucalyptus forests, black-soil plains, and broken, rocky tableland, proved a rich field for botanist Ray Specht. During 21 days there, Ray gathered more than 200 different plant species.

He assembled sets of ten, so that one specimen of each could go to the great herbariums of the United States, Europe, and England as well as to the capital cities of Australia.

#### Same Old Trouble—Women

Among bark drawings I had seen at Umbakumba, many related to sacred places in southern Bickerton Island; so I stopped there to learn more about them.

Two aboriginal brothers, Nangapianga and Yaliowa, along with a relative Tatalara, guided me. Knowing that all three men had engaged in tribal warfare, I asked each how many he had killed. Nangapianga admitted one, Yaliowa three, and Tatalara two.

"Why did you kill?" I asked Nangapianga.

"Oh," he said nonchalantly, "it's all over that woman business, you know." (Most fights occur over women.)

"What about me?" I asked. "Am I in danger if I go out with you chaps by myself?" (I knew quite well I was not.)

"Maybe," answered Nangapianga with a quizzical smile, "but not much; we no more myall (savage); more quiet fella, these days."

Tramping with me over the countryside, my companions pointed out sacred places of their ancestors (all mythical, of course); water holes made by the great snake; eggs of the jungle fowl, three feet in diameter; caverns where frogs, larger than human beings, still live; and a cave, once the home of a giant eagle who in "creation times" lifted boulders big as bungalows.

I spent three days with these three black-fellows, whose gentle courtesy belied their bloodthirsty past.

The *Wanderer* returned with the other members, all excited by their finds. On the Emerald River, Miller speared fish at night by the aid of a powerful electric torch, and



"Plenty Good Tucker Umbakumba," Says  
Lerrimaria

This announcement, delivered by the baker's assistant, means that Groote Eylandt native settlement has plenty of food (tucker). As long as the flour bin stays full, the children will have white man's bread at least once a day. Otherwise they must be satisfied with damper, an unleavened loaf made of flour, water, and baking powder.

by seine and derris root got hundreds more, many of them rare.

Setzler and McCarthy excavated the graves of three Malay trepangers at Winchelsea Island, but they found no artifacts to tell the age of the campsite. By working from the known (Malay) back to the unknown (Australian aborigine), they hoped to uncover clues





Forty-odd Children of the Groot Rylandt Native Settlement Gather Each Evening for a Candy Handout

If any children have misbehaved during the day, they get no sweets. Mrs. Marjorie Gray, wife of the English superintendent, is in a good position to judge, for she teaches them in school. Here one little girl says, "Thank you." Boys, their eyes beam between candy and caniers, await their turn on the right.



to establish a chronology in Arnhem Land.

They crossed to Groote Eylandt and at Baitakumba Point investigated an aboriginal burial cave, previously located for them by Kulpija. This aborigine led Frank, Fred, and me along the rocky cliffs and up a narrow vertical cleft to a cave where many skeletons lay in complete disarray. Elements and animals had scattered skulls, limb bones, ribs, and vertebrae once carefully wrapped in bark.

Kulpija climbed around the edge of the cave to a pile of bones. As he picked up a barbed wooden spearhead from the jumble of vertebrae, he recounted with glee how his father had killed the man in a fight because he was "proper cheeky fella."

"Him quiet fella now, all right," Kulpija concluded.

### Aboriginal Stag Party

Soon after I returned to the base camp at Umbakumba, I arranged for Groote Eylandt aborigines (men only) to perform the most secret of their rituals, the *awwailija*.

The sacred ground, hidden deep in thick forest, was an oval-shaped clearing smaller than a tennis court. Three bough huts close by stored ceremonial poles, meticulously carved and painted.

Membership of the ceremonial group was limited strictly to fully initiated men; no other aborigines were allowed on the premises.

With my wife as cook, Peter Bassett-Smith, Howell Walker, and I pitched our camp on a beach called Arawa. During the two-week ceremony we photographed the rituals with still and movie cameras.

Every day, and sometimes twice a day, the natives enacted ancient legends; in spirited song and vigorous dance they told of mythical serpents, turtles, sting rays, bandicoots, jungle fowl, and crabs.

We recorded many of the aboriginal songs—weird, primitive music that commemorated the epic deeds of giant creatures who lived when the world was young (page 779).

### Caves Preserve Ageless Paintings

Meanwhile, Bert Deignan, ornithologist, and Dave Johnson, mammalogist, combed the Umbakumba area. Their hunting grounds included sandy ridges around Little Lagoon, small streams that entered it through mangrove-lined channels, wide swamps bordered by sedge and paper-bark trees, and undulating forests of eucalyptus with coarse carpets of low shrubs.

The *Phoenix's* late arrival limited Deignan's and Johnson's time on Groote Eylandt. Nevertheless, during the few weeks they had there

Deignan noted 59 species of birds and secured 76; Johnson collected more than 100 mammals, many of them never before recorded on the island.

Fred McCarthy made a quick visit to Chasm Island, just north of Groote, where Flinders and his artist, William Westall, had seen and copied "rude drawings made of charcoal and something like red paint." But Fred's short stay allowed him to sketch only a few of the many paintings he had seen. He was most anxious for a party to return with him to assist in recording the aboriginal art and also the fantastic beauty of the island.

Later the photographers, my wife, and I accompanied Fred to Chasm Island to sketch and photograph.

The island, about two miles long and somewhat less wide, looked like a mighty medieval fortress. Its precipitous walls and deep gorges would test experienced alpine climbers. Rising steeply from the blue-green sea, the cliffs had eroded into grotesque patterns or tumbled into tremendous jumbles (page 764).

On Chasm Island Flinders had noted a drawing of a kangaroo followed by 32 people. I saw one painting of a canoe with 23 passengers and another craft with 11 large fish attached to it by ropes, showing that even primitive artists sometimes could tell good fish stories (pages 762 and 782).

### Aborigines Have Few Personal Possessions

None of our little group at Chasm wanted to leave the fabulous rocky art galleries of this charming island; but our time in the Groote Eylandt area had run out. We had to pack up for the move to our next base camp at Yirrkala, 125 miles by sea to the north on the mainland.

And none of the expedition members liked the idea of saying good-bye to many aboriginal friends made on Groote Eylandt. With these natives we had shared various experiences, rough and smooth, but always valuable. Without ever talking about it, they taught us their calm philosophy; they simply lived it.

We had seen babies born into families living as our neighbors in bark huts. Black men, women, and children had shown us how happily they could subsist off the land with almost no belongings. Spears, throwing sticks, little dilly bags, and digging sticks were their principal possessions.

Until quite recently they had no permanent shelters as homes; casual windbreaks made of boughs provided their only protection while sleeping in the open. An empty flour sack converted to loincloth was sufficient covering



for the well-dressed tribesman (page 752). Women wrapped calico around their hips and sometimes covered their breasts. Until six or seven years old children went quite naked.

One of our party applied to me for permission to stay longer on Groote Eylandt and complete his work among these natives; he pointed out that for him to leave would be like breaking off an interesting interview in mid-conversation. So Howell Walker, who arrived with the *Phoenix* seven weeks after the main body of the staff, said farewell and photographed the rest of us departing by launch and flying boat for Yirrkala.

The Royal Australian Air Force moved most of our personnel and equipment to a wartime airstrip (Gove) about four miles from the Yirrkala mission station.

Our camp near this mission turned out to be the pleasantest of all. We pitched our tents on the crown of a sand hill carpeted with a thick mat of dry grass, a welcome change after the yielding sand of Umbakumba.

Beyond our front yard swept a wide curving beach, where a crashing surf thundered day and night. In the "back yard" we had a fresh-water swamp shaded with large trees and fringed with luxuriant grasses. Here wound a creek of crystal water whose pools obviated the necessity of a bathtub.

And here in mid-dry season the weather was at its best. The early-morning mists of July gave way to warm days, while nights stayed cool and refreshing.

Soon after we settled down in our new camp, the Northern Territory Administrator's patrol vessel *Karu* visited us. With it came W. J. Harney, generally known to us as Bill and to the aborigines throughout the north as "Bilarney." He joined the expedition as guide and adviser.

His knowledge of Arnhem Land, especially the coast of the Gulf of Carpentaria, is phenomenal; of the aboriginal people, deep and understanding; of the fauna and flora, remarkable.

As storyteller, poet, and singer, Bill amused everyone with his tales of the country, of drovers and cattle thieves, of journeys among blackfellows; and he sang rollicking songs of stockmen or sailors.

#### Loose White Woman Remains with Blacks

Stopping briefly to pick up some of our members, the *Karu* continued 20 miles south to Port Bradshaw (not a port in our sense; just a large bay without docking facilities).

Here near the beach Margaret McArthur set up another nutrition camp. She wanted no other companions than two aboriginal in-

terpreters, Mau and his wife, Bali; Margaret claimed she would get a truer picture of the natives in their natural environment if she were the only European present.

Margaret's decision to conduct her research alone was that of a brave woman. She had known her interpreters only a few days; other aborigines in the area were complete strangers to her. Yet she stayed with those people nearly three weeks, observing their methods of gathering and cooking foods, and tabulating the quantities collected.

On her return, Margaret did admit she was not entirely comfortable when the *Karu* departed. For the first few evenings Mau entertained her with details of his part in the killing of some Japanese pearlers. Later she persuaded him to stick to more informative and less harrowing tales of hunting and fishing!

#### Natives Ask for "Sakshin"

The aborigines at Yirrkala were most friendly and willing to help us. They laughed, joked, and sang all day. Not uncommonly a native would stroll over to the laboratory where Billington and Hodges worked, and ask for a "sakshin," their term for the vein-puncture method of obtaining blood. Through their contact with Royal Australian Air Force doctors during the war, the blackfellows believed this a form of white man's magic that made them feel better.

As on Groote Eylandt, John Bray organized a "cockroach committee" at this second base camp. Two old blackfellows were trying to figure out why John went to all this trouble of getting insects, lizards, and snakes.

"May be," said one of them, "poor pickaninny belonga that white man, him hungry fella."

Fred McCarthy did a unique piece of research in the field of string games (cat's cradles). Over the greater part of Australia the aborigines are expert in manipulating with complicated finger movements a long loop of string into some real or fancied resemblance to an animal, plant, or other well-known object. The game is played mostly by women and children, but men have a number of secret string patterns which females never see.

McCarthy had as his informant a young woman called Narau, a positive genius with a single strand of string. She alone produced 180 different string figures. Only lack of time prevented Fred from recording an even larger number (page 780).

Soon after their return from Port Bradshaw, Setzler and McCarthy flew to Milim-gimbi Island, 135 air miles to the west of





Groote Eylandt Boys Look at Luxembourg Lads in the NATIONAL GEOGRAPHIC MAGAZINE

These boys like to discuss things remote from their island world. Some simple words they have learned to read through attending school. Their favorite pastime in the evening is to invade the English superintendent's homestead and huddle over picture publications. Here they study page 802 of the June, 1948, issue.

Yirrkala on the north coast. Here they investigated extensive shell heaps (mounds of discarded mollusk shells) up to 200 feet in circumference and 20 feet high. The two scientists hoped that by digging into one or more of these mounds they would obtain evidence regarding the prehistory of the aborigines of the north coast of Australia.

The Reverend Thomas H. Hanna, then in charge of the Milingimbi Methodist mission, provided native boys to assist in the excavations. Two 10-foot-wide trenches were dug through the doughnut-shaped shell heap around a large fresh-water spring hole. This well, only source of fresh water on the island,

was the center of all ceremonial and mythological clan activities.

From the trenches, excavated at one-foot levels, many chipped and polished stone objects were recovered. Most important finds were polished stone axes.

Tamarind trees serve as the most obvious guide in locating old Malay trepang sites. These trees, foreign to Australian flora, were introduced by Malay fishermen. Although many tamarinds still grew on the mound worked by Setzler and McCarthy, no object of Malay origin came to light. A few Malay potsherds were picked up along the beach half a mile from the mound.



Bark paintings done at Yirrkala fascinated me. In simple but beautiful designs they told of the mythical ancestors of the tribe and their doings of long ago (page 759).

In the late afternoon, when the aboriginal artists had finished their work, Bill Harney and I would sit among them, listening to stories they had illustrated on sheets of stringy bark. We heard of the women of Burubala whom everyone feared; of Murumuru, the great fisherman; of the Milky Way, of Orion, and other stories of the starry sky.

#### Leader Presented with His Own Coffin

Accepted as a member of the tribe, I received my place in its organization. According to the old men, my ancestor was Tjambul, the thunderman, a very important and somewhat dangerous character. The thunderstorm was his voice, the clouds and the rain the result of his power. Most important of all, it was he who sent the tiny spirit children to earth to become human beings.

One day the elders brought me a cylinder of bark painted with many strange symbols. This, they explained, was a coffin in which the bones of a dead man were interred after final burial rites. With shy smiles and gestures between themselves, they added that the designs belonged to my ancestors. In other words, it was my coffin! The aborigines regarded this as a good joke: to me, it seemed rather gruesome. Nevertheless, I still have that coffin. One never knows!

We spent much time with the native children. They were so unafraid of us, so completely at ease, that Bassett-Smith and I decided to make a moving-picture film of their everyday life.

Full of fun and laughter, the kids quickly fell into the spirit of the thing. We photographed them paddling their tiny dugout canoes through rough water, playing their complicated string games, building odd figures in the sands or staging their childish ceremonies, spearing fish or bathing in the creek.

Dave Johnson wanted to capture a dugong, a herbivorous sea mammal inhabiting the shallow waters of northern Australia. The female (*cf.* the mermaid legend) clasps her single young tightly to her breast with one flipper when she rises to breathe.

The dugong measures up to eight feet in length; never leaves the water; for it feeds on submarine pastures of a sea plant known as dugong grass. The nutritious flesh of this creature resembles pork or veal; aborigines like it when cooked on coals.

Areas where dugong feed are well known and carefully scanned by the natives. At the

first sign of floating grass, which indicates dugong "grazing" below, hunters slowly paddle their canoe to the spot and spear the animal as it rises to the surface for air.

Just opposite Bremer Island in the vicinity of Yirrkala is a sheltered bay where dugong grass grows plentifully. Here Maulin, one of our helpers and a noted hunter of the sea mammals, had got many. But their capture requires more than a quick eye and a skilled hand; it calls for a calm day—no wind and a still sea.

At last the perfect hunting day arrived. Maulin, with 14-foot spear, Dave with gun, and Peter with camera set out for the dugong bay. But when they rounded the point behind which the native kept his dugout, they saw the canoe paddled by several of Maulin's wives (he had many) well on the way to Bremer Island. The aborigine's language or that of the others was not recorded. Dave never did see a dugong.

However, while at Yirrkala, Johnson captured 159 land mammals. It was one of the sights of the moonlit evenings to see Dave shooting at, and occasionally hitting, bats as they arabesqued overhead.

Often natives brought a kangaroo or wallaby into camp. These were occasions of rejoicing, first for Johnson, second for members of the expedition; for, after Dave had taken the skin, he passed the carcass to the cook. The fresh meat made a welcome change from the usual tinned food and an occasional fish.

#### Naturalists' Rare Find

Observations by Ray Specht and Bert Deignan seldom benefited each other, but the two naturalists shared one particular interest at Yirrkala. Bert caught a rare friarbird (so called because of the bald patch on its head) which frequented a scarlet-flowering mangrove. This tree, Ray later discovered, was as rare as the bird; it had not been previously recorded in Australia.

At Yirrkala Bert observed 115 and collected 82 different species, while Ray added 288 species to his ever-increasing pile of dried botanical specimens.

Here Bob Miller also made a rich haul. A coral reef, teeming with fish, lay less than 200 yards from the cookhouse. Along this one reef Bob secured more than 110 different species.

In this work he had the enthusiastic assistance of the native people. Once he counted 55 of them retrieving the fish stunned by the action of powdered derris root. Bob had difficulty making the aborigines understand that very small fish were as valuable to him





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Illustrations by Howard Walker

### Aboriginal Artists Explain Their Paintings to the Expedition's Leader

Charles P. Mountford takes notes as a native at Virrkahn uses a Malay-style smoking pipe to point out his mythological symbols. The Stone Age men use sheets of stringy bark as canvases, ochre and kaolin for pigments.





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Excursion to Bandi Walker

# Under a Well-known Flag, Expedition Members Gather at Genpieli. Their Camp Spreads Near the Shore of a Large Lagoon

Personnel from left to right are: Peter Bassett-Smith, photographer; Reginald Holloway, chef; Dr. David H. Johnson, mammalogist; William Harvey, guide; Fred McCarthy, anthropologist; Herbert G. DeGnan, ornithologist; Mrs. Mountford, wife of leader; Dr. Brian Billington, medical officer; Miss Margaret McArthur, nutritionist; Kelvin Hodges, biochemist; Charles P. Mountford, leader; John Bray, transportation officer; Frank M. Setzer, deputy leader. Not included in picture are: Dr. Robert Miller, ichthyologist; Ray Specht, botanist; Howell Walker, National Geographic representative.



## In Arnhem Land He Makes Masks of Aboriginal Faces for Study in America

Frank M. Seteler, Smithsonian anthropologist, uses common mud to mold features of Kulpija, a Gaoete Kykath native.

After heating the mixture in a crude double boiler over a campfire, Dr. Seteler smeared a thin coat over the model's features. A second heavier application is dabbed on with the middle, as at left. The mold requires 30 minutes to harden and then slips off easily. It is later dried in the sun and filled with plaster of Paris (right).

Aborigines were skeptical at first, but were coaxed into modeling by the offer of American tobacco. Cut pipe usually made them ill, but was highly relished, nevertheless. Even women and children agreed to "cut" to gain attractions for their menfolk.

The process was painful for the model, but aboriginal kids, laughing and jeking on the side lines, made the "victims" extremely self-conscious.

Model and bystanders alike were fascinated and delighted by the finished masks. Kulpija and Kumbula display each other's "faces" at upper right.

By National Geographic Society

Illustrations by Harold Walker







BY RALPH WATSON FOR LIFE

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Kokodomo by Donald Walker

#### ★ When Did Aborigines Paint Chasm Island's Stenciled Hands?

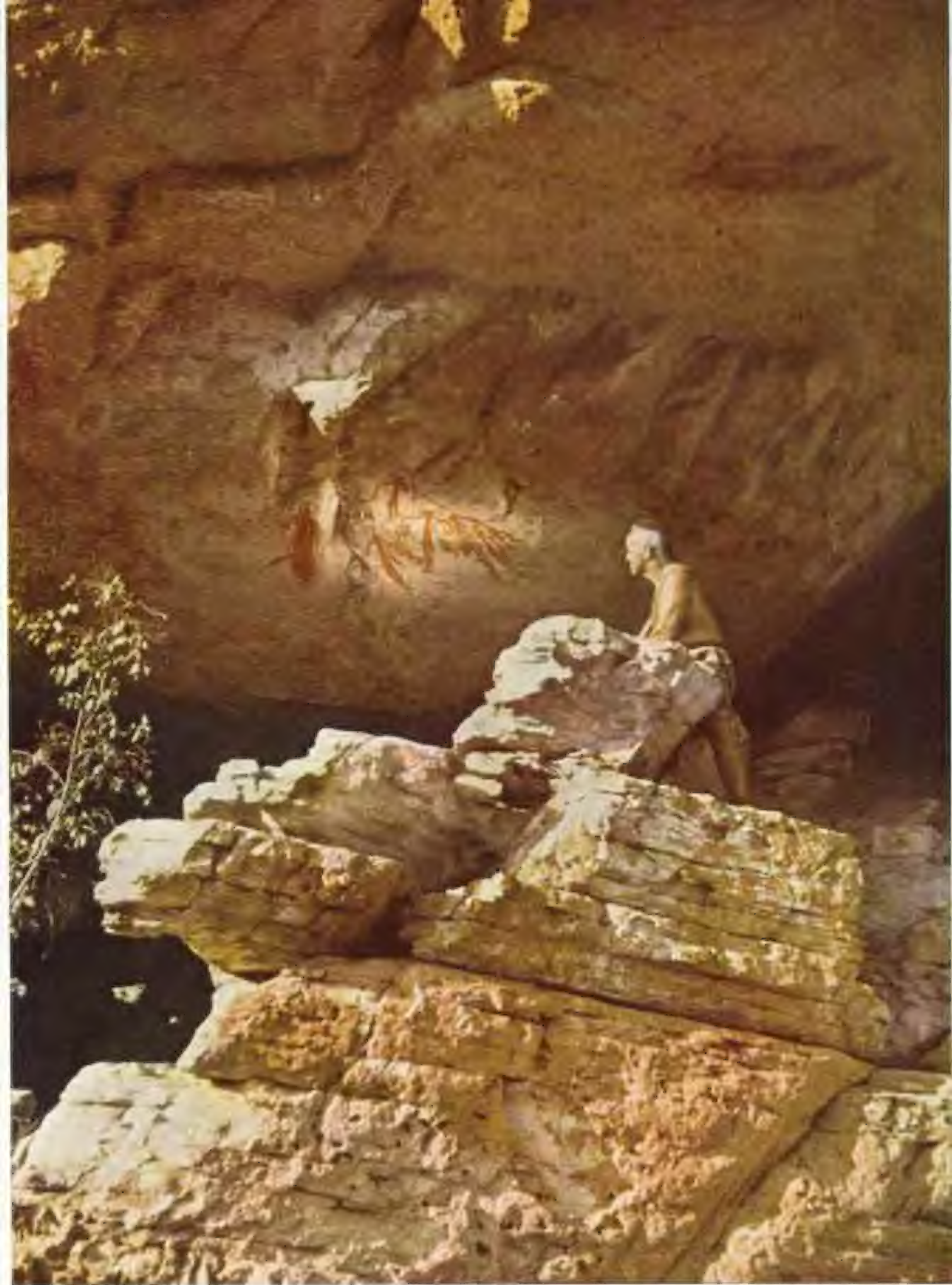
No one knows. Matthew Flinders saw them in 1802 when he visited this rugged isle off northern Groote Eylandt. The Arnhem Land expedition sketched and photographed them in 1948. Here a native guide tells legends associated with them to Charles Mountford.

#### ★ Dark Heads and Pearly Smiles Set Off Bougainvillea and Water Lilies

When these girls at Groote Eylandt walk out into the bush, they often return with bunches of wild blossoms for the settlement's homestead. In this way the English superintendent and his English wife learn aboriginal names of local plants and flowering trees.







### Sunlight and a White Man Reflect on Paintings by Primitive Abos

Untold centuries ago native artists expressed themselves on cave walls and ceilings in rocky hills around Gropelli. Red, yellow, and white paints were made from ground-up ocher and kaolin mixed with water; black came from charcoal.





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**Clivism Island's Rock-rugged Shores and Smooth Sandy Beaches Offer Colorful Lures for Both Aboriginal and White Visitors**  
Expedition members return from clamoring through natural tunnels into caves and up cliffs where they found a variety of rock paintings. Natives were more interested in Clivism Island's beautiful fishing grounds. They speared a big pigfish and a parrot fish, which the youngsters are carrying back to provide a welcome meal at base camp.



Contributed by Howell Walker



Gaily Colored Birds, Insects, and Fish of Groote Eylandt Suggest the Variety of Arnhem Land's Huge Natural Zoo

The small fish is a grouper, a member of the sea bass family. The "walking stick" (*Podocentrus spilargenteus*) at center is a familiar sight in northern Australia. This one measured 4½ inches. The koikaburra, or laughing jackass (left), was captured near the expedition's camp.

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Illustrations by Howard Walter



She Weighs Native Friends  
with the Same Care  
Mother Gives to Baby's  
Formula

On a lark trip at Oenpelli  
Miss Margaret McArthur, nu-  
tritionist, watched these  
women and girls knock "wild  
apple" (*Eugenia*) from trees  
like those in the background.  
When they had collected  
enough for a meal, she weighed  
the food and took notes on  
how it was eaten.

Miss McArthur was detailed  
to the expedition by the Aus-  
tralian Institute of Anatomy  
at Canberra. (One two-week  
period she spent in an aborigi-  
nal camp at Port Bradshaw,  
about 20 miles from expedition  
headquarters at Virrkala. She  
was the only white person  
there. Object was to study  
food gathering, cooking, and  
eating.)

Scarification marks on the  
shoulder of the middle woman  
are similar to those on the  
men's chests (page 772).  
Ashes are rubbed into open  
cuts to make these permanent  
wells. Common among aborig-  
ines throughout the world,  
such scars signify maturity.

© Sydney Operations Society

Reproduction by Robert Walker







## Neither the Cares of Motherhood nor Medical Examinations Can Banish Laughter from These Carefree People

Seated on the hot sand nursing her child, the woman reacted happily when the photographer tried to win the word for smiles in her language.

About 20 years old, she lives in a native camp beside the Yrkala Methodist mission station.

Dr. Brian Hittington, of the Institute of Anatomy at Canberra, Australia, took the picture of another woman at his office-pantry outside Oenpelli. Along with biochemist Kelvin Hodges, he worked tirelessly studying the health of the aborigines.

Natives were at first fearful of the visiting scientists, but rapidly became accustomed to medical examinations and operated willingly.

Aborigines have a high infant mortality rate. If they survive infancy, however, they are in general a healthy lot, with no more disease than is found in any large group.

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Continued on Page 107







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Reproduction by Russell Waller

### There Lies Arnhem Land—Inhospitable, Rugged, Hungry, Thirsty, and Still Little Known to White Men

From a hill near Ompulli descendants of the first folk to reach Australia look toward their eponymous domain, roughly the size of Maine. This region has been declared out of bounds to white settlers. Aborigines live unmolested.





## Primitive and Modern Nets Operate Differently, But the Catch Is Still the Same

With folding net of broad banyan-bark strips, the native waits for small, noisy fish (left). If he wants bigger fish, he takes a larger but somewhat similar contraption farther out into Chespell Lagoon. Aborigines operate these traps like jaws, snapping them open and shut with quick movements.

Beside the same lagoon, Dr. Robert Miller, ichthyologist, prepares to set his gill net for fish specimens for the Smithsonian Institution in Washington, D. C. At its far end he walks backward while an assistant feeds it out. They will suspend it vertically like a tent; his net is about five feet of water and let it remain there for a brief period. Dr. Miller sometimes made such heavy loads that he gave duplicate specimens to natives for feasts.

This fresh-water pond abounds in many kinds of fish, including mullet, silverfishes, grasspears, butterfly fish, and varieties similar to herring and perch.

Dr. National Geographic Society

Researches by Dr. Robert Miller







**Ocher-painted Natives Hop Like Kangaroos Through a Dust-stirring Dance in a Secluded Glen**

Crouched low, hands on one another's hips, Gupelli men twist and shimmy as they increase the feverish tempo of their corroboree. This aboriginal song and dance, an all-day affair, is held only on feast days.





**An Aboriginal Gabriel Blows a Primitive Trumpet; the Men Jump to the Rhythm**

A most important part of the orchestra, he puffs ceaselessly into the long drone tube, a *didgeridoo*. Besides his bass notes, the pounding of a hollow-log drum and beating of sticks keep dancers swaying.



Aborigines Smear Their  
Bodies with Lustreous  
Clay to Illustrate the  
Life of Bees

The two dancers flanking a stick-benting musician are painted with an elaborate bee's nest pattern. During the corroboree they enact the flight of the bees.

Normally, Arnhem Land aborigines are black; they even look blue-black at high noon. Here the musician has been covered all over with red ochre on top of which the lighter design was added. The heads of the two dancers reveal more nearly the true black of native skin. All three have lost some make-up by perspiring freely while they performed in the Hahakruk ceremony, which reproduces the mythical experiences of the great spirit.

Their *nagas* (cloincloths) came with the white man. Previously, natives went stark naked.

Scarification marks on the men's chests were made by hot irons or by rubbing ash on festering wounds. All boys submit to this torture in elaborate rites that commemorate their coming of age.

No tribal women are allowed to see or even stay within hearing distance of the corroboree. Expedition personnel received special permission to attend.

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Reproduction by Harold Wether





# A Sacred Drum Gets a Coat of Many Colors, While a Dancer Has His "Bottoms" Done Up the Back

The drum furnishes music for the honeybee dancer at right. Natives believe the dance brings good luck, leading them to many "sugar bags"—honey trees.

by Sordahl Gougeon Miller

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Kodi frames for Howell Walker







as the larger ones. Naturally, the big stuff appealed more to his helpers, for they received any surplus.

A visit to a coral reef is always intriguing. The entrancing colors of the corals, the varied hues of sponges, the deep orange of some octopuses, the indescribable beauty of the fish as they dart in and out, and the remarkable attraction of the anemones, or seaflowers, leave an indelible impression.

In form and delicacy of coloring the sea anemones are unrivaled even in surroundings of more than ordinary brilliance. They are well-named flowers of the reef, for they bear more than a passing resemblance to blossoms; their tentacles wave like the petals of the land anemone from which they take their name.

The sea anemone captures its prey, usually small fish, by paralyzing it with its stinging cells. A strange partnership of the reef exists between anemone and the small, highly colored anemone fish, somehow immune to the sting of its companion. To capture its food, the anemone fish lurks among the tentacles of the host until the prey passes within reach. With a quick rush he catches a small fish, drags it within range of the stingers, and holds it there until paralyzed. The anemone and its companion share the meal.

#### Natives Make Spirit of Sick White Man Happy

During the stay at Yirrkala our only staff change took place. Keith Cordon had to return to Adelaide, South Australia, because of his father's illness. John Bray took over as transport officer, and Reginald Hollow arrived from Darwin to become the new cook.

A day or so before Cordon's departure, Yirrkala natives on their own initiative held a *corroboree* (pages 770 to 773). This ceremony was a spontaneous demonstration to make, as they put it, the spirit of the sick man happy. At the end of the performance one of the blackfellows handed a carved message stick to Keith. The aborigine explained that markings on the baton were merely symbolic, but meant to convey hope for the sick man's recovery.

At the end of August the motor launch *Wanderer* arrived from Groote Eylandt. Fred Gray brought Howell Walker back to the expedition fold. They had recently completed a journey up the Roper River, southeastern boundary of Arnhem Land. Reported missing for several days during this voyage, the *Wanderer* became the object of a search by planes from Darwin and a subject for daily news items from Radio Australia.

Gray and Walker explained that they had been in no danger, but that they had to shelter for three days inside the Roper mouth until the Gulf of Carpentaria calmed down enough to let the *Wanderer* return to Groote Eylandt. It was this delay, unaccounted for at the time, that caused alarm when the launch failed to show up at Unbakumba.

Early in September we broke camp at Yirrkala and began the move in several plane-loads to Darwin. From there we shipped out by way of Van Diemen Gulf and the East Alligator River to our third and last base at Oenpelli, 150 miles east of Darwin (page 760).

Two of our staff, Dave Johnson and Peter Bassett-Smith, elected to travel from Yirrkala by boat with some of the heavy equipment. Johnson disembarked at Cape Don to look for animals on the Cobourg Peninsula. Bassett-Smith continued to Oenpelli aboard the vessel.

In selecting Oenpelli, I had estimated that it would be the most spectacular, most productive, and at the same time most uncomfortable of our three research centers.

Our tents faced a large billabong, its surface spotted with water lilies and fringed with green grasses; on the far shore a eucalyptus forest spread to the 500-foot escarpment of the rugged Arnhem Land tableland (page 768).

It will be a long time before I see anything more stirring than the sight from our camp. Shortly after dawn a filmy mist crept slowly across the surface of the billabong, veiling and softening lilies on the water, the outlines of distant trees, and the reflections of the torlike hill called Inyalark.

Then the mist changed from the soft, silvery grays of dawn to the rosy hues of sunrise, disappearing into nothingness as tropic sun rays fell on its ephemeral surface.

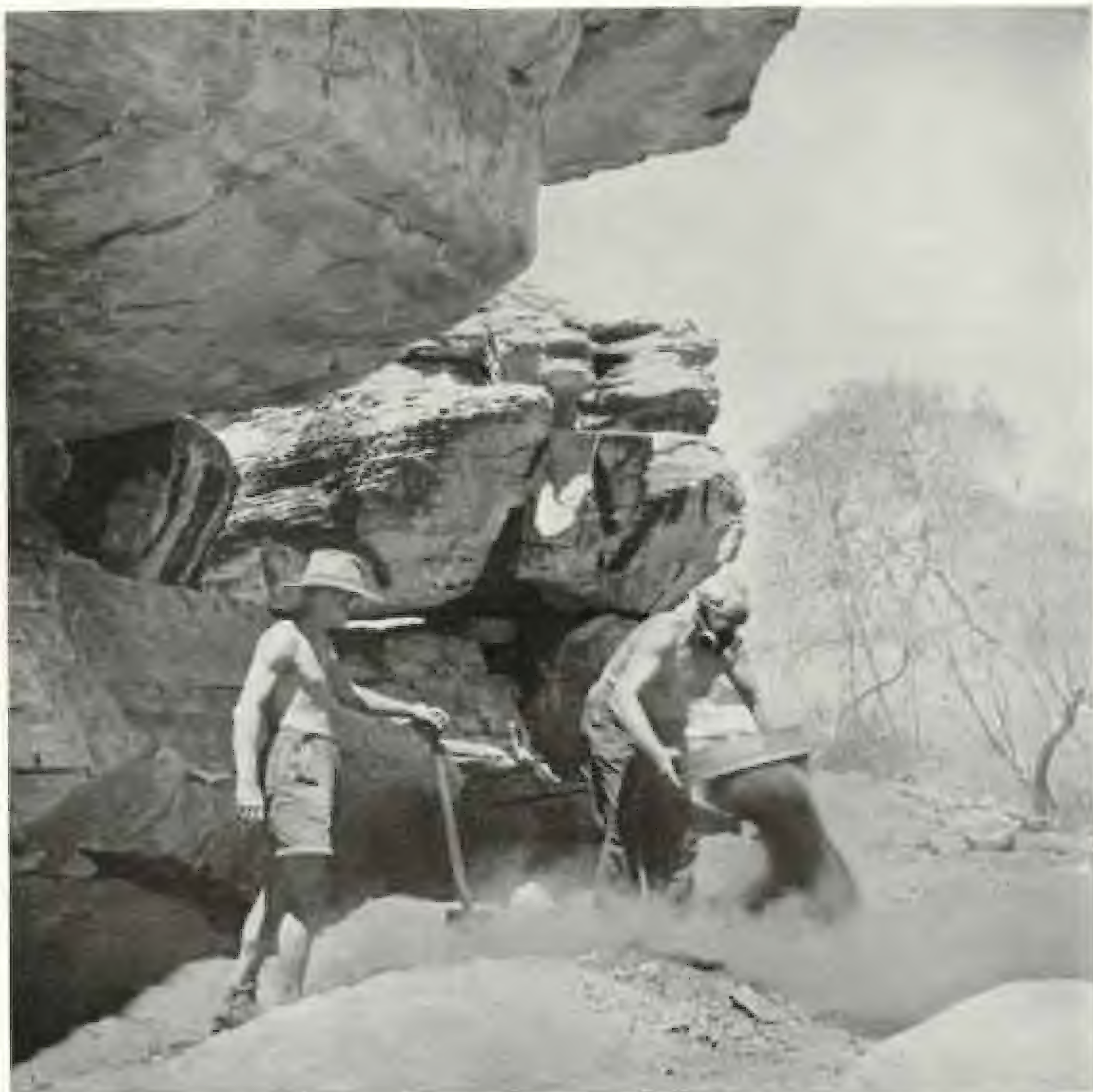
Nor were the late afternoons less beautiful. As the sun sank into the haze of bush fires, it glowed like a huge ruby and warmed opalescent purples of the distant escarpment with the ruddy tones of evening.

During the day, wide plains and rocky hillsides reflected the sun's burning heat; winds blew hot and dusty. At midday the temperature in our tents stayed above the century, sometimes reaching 107° F.

Oenpelli has four distinct physical environments, each rich in its own flora and fauna: the extensive swamplands; the open savanna woodlands; the black-soil flood plains of the Alligator Rivers; and the forbidding plateau where cave floors hold relics of early man and cliff walls show primitive paintings.

There were birds everywhere: ducks on the water, jungle fowl in the forest, quail in the grass, and pigeons in the treetops.





### Goggled Scientists Dig and Sift the Dust of Ages for Clues to Humanity

Frank Setzler had to wear a mask to filter out the thick black dust near the Denpelli base camp. Here he uncovered skeletons and chipped stone implements. In a near-by cave, he found a stone adze with wooden handle intact, the only one of its kind known on the continent; Australians hailed it as a significant discovery (page 740). Fred McCarthy, of Sydney's Australian Museum, alternates at the shoveling work.

Each morning we heard the honking of Australian geese as they crossed the rosy sky in great wedge-like formations; harsh cries of the cockatoos flying in ragged clouds to distant plains for their daily food; shrill, strident, yet plaintive calls of the marsh plover; and the contented sounds of smaller birds on the water's edge.

The abundant bird life so overwhelmed Bert Deigman that he hardly knew where to start. For him the day never lasted long enough; he usually went out before breakfast, and midnight often found him sitting beside his kerosene lamp, cleaning and pre-

serving specimens. Mosquitoes, beetles, and moths fluttered about his head, getting tangled in his luxuriant sandy beard (page 746).

Many prizes fell to Bert: tiny grass wrens, Arnhem Land rock pigeons, and exquisite azure kingfishers.

He added a cattle egret to his list. Unlike the rest of the heron family, this bird doesn't live on water creatures; it catches insects disturbed by the feet of grazing livestock and water buffaloes. The cattle egret had not been recorded before in Australia.

One day Bert saw a rare owl and the beautiful Torres Strait pigeon on the same tree,





### A Robinson Crusoe in Arnhem Land Types His Notes and Takes His Bedroom Picture

Aboriginal paintings decorated writer-photographer Howell Walker's office and dormitory near Oerpelli. Rain never fell, as heavy cobwebs show. Breezes seldom stirred; but at night mosquitoes hummed, hence the folded net hung over the cot. Barbers were so scarce that Walker had no difficulty posing as a cave man.





Alas, Poor Yorick! Alas, Poor Setzler! Photographers Used Them Hard

To combat the elements and animals, aborigines chose out-of-the-way niches, crevices, ledges, and caves for hiding their ancestors. The Smithsonian anthropologist crawled into this shallow burial cave near Oenpelli, first for moving pictures, then for still cameras. When asked what his find meant to him, Setzler commented: "Measurements of the skull indicate a long-headed individual with a cephalic index of 69."

Water and shore birds flocked to Oenpelli Lagoon in hundreds, perhaps thousands: the jabiru, or giant Australian stork; slaty-blue brolga; pelicans; royal spoonbills; dainty white egrets; various plovers; the ludicrous Burdekin duck; and magpie geese. All came to feed in the shallow marshlands.

In deeper waters of the lagoon photographers "shot" pygmy geese as they fed in pairs among the rich blue and pinkish-red water lilies; and cameras focused on the lotus bird, light enough to walk on lily pads.

#### Father Fish Hatches Eggs in His Mouth

Now, toward the end of the long dry season, marshes and billabongs were drying up; fish concentrated in the small permanent waters. The morning after he set his first gill net, Bob Miller took out 165 catfish alone, not troubling to count other kinds caught. He declared Oenpelli Lagoon the richest body of water he had ever fished.

Here, too, Miller netted a male cardinal fish, which holds the eggs of the female in his mouth until they hatch. During the period of incubation—about five weeks—the male, poor fish, can take no food.

There is general belief among some aborigi-

nal people that the father of a family has nothing to do with the birth of his children. About his own offspring, however, we feel that papa cardinal fish could say a mouthful!

Many interesting species of flora found close to camp by Ray Specht included wild rice on the flood plains; a pandanus, thought to be a new species, on a stony slope; a multitude of grasses, sedges, and water lilies from the marshes; and even a gray arum lily.

Although most eucalypts of Australia shed their bark and not their leaves, Specht called our attention to many deciduous trees of this family in the Oenpelli area.

An aboriginal group of six men and three women camped at Fish Creek, 15 miles from Oenpelli. There Fred McCarthy, John Bray, and Margaret McArthur spent a fortnight. Fred went hunting with the men to note and photograph their methods of tracking, stalking, and spearing kangaroo, wallaby, and other game; John increased his insect collection; and Margaret enjoyed her first opportunity of investigating food habits of aborigines living away from the sea.

Inyalark, the hill across the lagoon from our camp, was eroded into a labyrinth of huge tumbled boulders, tunnels, crevices, and caves.





### Much Wailing but No Microphone Fright Marks the Amateur Hour on Groote Eylandt

India, who wears white cockatoo feathers, beats time with sticks as he delivers an unmelodious chant about bandicoot, turtle, shark, or sting ray, all important tribal totems. The pendant, a charm bag which India bites in battle to give him courage and frighten his adversary, formerly contained the fat of an enemy. Examined by scientists, it revealed a medicine man's darning needle used to "cure" ill persons. Here the author makes the wire recording in a studio of eucalyptus boughs.

Bill Harney, Howell Walker, and I spent a week among its great rocks, photographing a multitude of aboriginal cave paintings (pages 763, 777). We camped on the hill to eliminate walking from the main base every day and to save time for photography.

#### Slept Next to Human Skeleton

Colossal stone slabs leaned against each other to form our shelter. Primitive paintings, many faded beyond recognition, decorated our walls. Within a few feet of where I slept lay the scattered bones of a human skeleton left there long ago for burial.

During the night we often heard bats fluttering, rock wallabies hopping, and noisy native cats close by. One cat, a dusky marsupial with whitish spots, visited us repeatedly to seek morsels of food we dropped.

One evening Howell left an open tin of sardines on a flat rock beside our campfire, set up his camera, and waited. A native cat appeared, smelled out the fish, and settled down to eat. When the flash bulbs fired, the animal didn't even look up; he retreated only when the photographer moved his apparatus to within 35 inches of the bait (page 781).

The cat soon returned to the sardines despite the recent disturbance. This time the bulbs went off right by his whiskers, and the cat took a back dive out of the picture.

Most attractive rock paintings were the polychrome designs of birds, fish, and animals executed in the characteristic X-ray art of the area, a technique in which the internal details of the creature—stomach, alimentary canal, and heart—are drawn as well as external features. A many-colored mosaic of turtles, barramundi, kangaroos, snakes, and subhuman figures covered some cave ceilings.

In the more remote caves we found a different form of art. This, the native men explained, was not the work of their ancestors, but that of a tall, thin-bodied, mythical race called the "Mimi." No aborigine has seen a Mimi; these mysterious people with particularly keen hearing escape into the hills when strangers approach. They live among rock clefts, venturing abroad only on calm days, lest the wind break their fragile bones.

The art of the Mimi consists largely of single-line drawings, almost exclusively of human beings. Many are delightfully spirited, especially running and dancing figures.





Narnu, Composing Cat's Cradles, Can Tell 200 Legends with a Single Strand of String

Each string figure represents a legendary tribal character or totem. Some string techniques are so complicated they require all the fingers of two storytellers. Here Narnu, interviewed at Virrkala, tells the story of Barakumun, the native cat, a clan totem. The right thumb and finger loops represent its forepaws; the central knot its head, and the opposite loops its hind legs (page 736).

One design of a man throwing a spear shows remarkable resemblance to figures painted by primitive bushmen of Africa and Stone Age men of Europe.\*

#### Found—A Complete Stone Age Hatchet!

For centuries aborigines had obviously used numerous caves in the hills and sandstone escarpments near Oenpelli. In addition to the natural protection, the concentration of small marsupials such as the bushy-tailed rock wallaby, and of the native cat, invited the black people to spend the annual six-month wet season there.

On Inyalark Hill Setzler and McCarthy excavated former aboriginal cave campsites (pages 776 and 778). Most prevalent man-made object found was a crude quartzite scraper. Although this same type of scraper had also been found throughout the eastern coastal area of Australia, just how aborigines had used it had never been determined.

One day while removing powdered ashes at the back of a cave on Argaluk Hill, Setzler uncovered a stick of wood. At one end of it was a neatly formed gob of pitch, and from the gum protruded the shiny edge of a quartzite scraper.

Here, at last, was one answer, undoubtedly *the* answer, to how aborigines used these scrapers. Setzler had found a Stone Age hatchet, handle and all intact.

The Australian Museum of Sydney described this hafted axe as one of the most significant archeological discoveries made in Australia.

Argaluk Hill had still other stories to tell of the long ago. Here the aborigines of the tribal area gathered, as their kind must have done for centuries, once a year for an all-day *corroboree*, called Baluknuk. Painting their bodies all over with varied ochre hues, they hopped like kangaroos, writhed like serpents, ran like the emu, fluttered like bees of the "sugar bag," and swayed like trees in a wind.

The sacred Baluknuk drum, a six-foot-long hollow log decorated with ochre patterns, throbbed throughout the songs and dances (pages 770 to 773).

Apart from entertaining and informing us, the spirited ceremony initiated youths into the tribe as full-fledged hunters, as men.

Away from Oenpelli, Dave Johnson worked

\* See "Lascaux Cave, Cradle of World Art," by Norbert Casteret, NATIONAL GEOGRAPHIC MAGAZINE, December, 1948.





Even with Sardines Under His Nose, the Australian Native Cat Seems to Smell a Mouse

Not a feline, this marsupial (*Feliscella hallaculata*) has never been domesticated. Hunger led the animal into a camp kitchen near Oenpelli. A flash shot seven feet away did not budge the cat; but this picture, taken within three feet, sent him scampering. He returned later to finish the interrupted meal (page 779).

the Cobourg Peninsula. He covered much the same ground as did John Gilbert, the naturalist, in 1840. Dave wanted to obtain another set of skins from the area to supplement Gilbert's original series of type specimens.

#### Lonely Walk Through the "Never-never"

For three weeks Johnson roamed the peninsula, collecting 45 animal specimens. In early October I received a signal by radio from him; he planned a 160-mile walk to Oenpelli and expected to arrive in 12 days.

Now at the end of the dry season the heat was intense; streams were evaporating rapidly. Although I assumed that aborigines would travel with Johnson, I knew how easily one could meet with serious trouble for want of water in this country. One has to live in the "never-never land" to realize its isolation, emptiness, and dangers.

Bob Miller finished fishing and prepared to return to the United States.

Occasionally we had parties when everyone drank to the other's health, sat down to a special meal, and spent the evening singing folk songs and telling stories. As a farewell to Bob, chef Reg excelled himself. Halfway through the banquet someone called out, "There's Dave!"

Coming slowly across the plain was the mammalogist; he carried a knapsack and his gun.

In a body we rose from the table and rushed out to welcome him.

"Where are your black boys?" asked Frank, for white men just don't move in that country without aborigines.

"What boys?" Dave asked blandly.

And that, briefly, was Dave Johnson: quiet, self-confident, fearless, and full of common sense. As he could not find any blackfellows to make the entire journey with him, he had set out alone.

He first plotted his course on a topographically inaccurate map (the only one available), then navigated by compass.

When I remonstrated with Dave for tackling so hazardous a trek alone, he assured me the journey had been quite uneventful. He told of ample game and streams with water; and he could travel at his own pace. However, nobody but Dave will ever know the whole story of his adventure.

So Miller's farewell became at once Johnson's welcome. Merrily we sang the camp ditties, and Bill Harney recited a poem he had that day composed about Oenpelli. Here's one verse:





### A Frame of Sticks and Strings Helps an Anthropologist Copy Rock Paintings to Scale

How long ago the aborigines executed their other murals no one can say. At first glance such drawings appear to be the work of children; but the strong, simple lines and anatomical accuracy proclaim the work of experienced artists. Fred McCarthy, of Sydney's Australian Museum, recorded numerous examples of native art such as these kangaroos painted on the rocks of Chasm Island (pages 755, 762, 764).

There was Monty chasing Mirra, like an 'ound  
upon the trail.  
And Bert behind his whackers, after snipe and  
duck and quail.  
There was Bob a-cursing leeches that were cling-  
ing to his knees,  
And Dave a-shooting dinghats as they flitted  
through the trees  
Mid the "moxies" near the pool at Oenpelli.  
(Mozzies are mosquitoes.)

With Bob Miller's departure, the rest of us realized how little time we had left together. Australians and Americans had lived for more than thirty weeks as one family.

Research work of the expedition resulted in a collection of 13,000 fish, 13,500 plants, 850 birds, and 460 animal skins; literally tons of ethnological specimens, bark drawings, and archeological finds; a mass of data on aboriginal health, nutrition, and food techniques; five miles of colored moving-picture film and countless still photographs.

And with us we took away the simple conviction that the natives' attitude to their white visitors largely reflected the visitors' treatment of the natives.

First rains of the wet season sped up our move from Oenpelli in mid-November. Aborigines assisted in folding tents, nailing down cases, and shifting heavy equipment.

To reach the river landing we had to race seven miles over the plains before they became flooded. There black men worked with white against time to stow gear aboard a barge before the tide rushed out. Down the East Alligator River we swept with the swift current, then headed for Darwin to keep an appointment with civilization.

Calmly, slowly, the aborigines returned to their halcyon life in Arnhem Land where haste had no place, where time never mattered, where tribal folk didn't reckon in days or years or even centuries.



# Adobe New Mexico

BY MASON SUTHERLAND

*With Illustrations by National Geographic Photographer Justin Locke*

FROM the heights above Santa Fe, oldest capital city in the United States, one can see the lights of Los Alamos, the Atomic Age city.

Indians working close to atom bombs go home to their pueblos by night and take part in fertility dances already old when Spanish explorers marched in four centuries ago.

Descendants of the Spanish settlers build their cool, simple homes of adobe, or sun-dried brick, just as ancient Egyptians used to do.

Anglo-Americans, as the third population element is called, acclaim both adobe architecture and tribal dances. Almost to a man, they say, "I wouldn't live anywhere else." They point to clouds drifting like galleons across the sky, or to stars blazing like undimmed automobile headlights.

## Forests Paint Hills Green and Gold

Here, where mountain peaks rise to 13,000 feet, the summer day is rarely hot, and June nights call for lighted fireplaces.

The Rockies, colored forest-green or aspen-gold according to the season (pages 798 and 799), rise in two ranges, the Sangre de Cristo and the Jemez, their topmost peaks agleam with snow.

These ranges straddle the Rio Grande, a brawling, muddy stream flowing out of the mountains of Colorado. For miles it tumbles through an enormous, unpopulated chasm. Where its valley flattens out somewhat, watering cottonwoods and crops, it supports the Pueblo Indians, most advanced aboriginal culture surviving in North America.

Between river and mountains stretches a desert studded by piñon pines, which from a distance appear to have been planted in orchards, or by oceans of gray-green sagebrush, which give the illusion of being fields of ripening hay. Lava badlands and raw red cliffs enhance the desert's rich variety (page 804).

At intervals the wasteland is relieved by a ribbony green oasis, the irrigated valley of a trout stream flowing out of snowbanks above timberline.

This report deals with that section roughly bounded by Santa Fe, Los Alamos, Taos, and Cowles (map, page 787).\*

On a sagebrush plateau at the north end of this quadrangle stands Taos, a cluster of adobe homes built around the town plaza. To all

appearances a country village, population 1,000, Taos is the cosmopolitan home of hundreds of painters, writers, and wealthy folk who have made it the Southwest's adobe Greenwich Village (page 803).

Artists in work clothes and art students in lush whiskers frequent the Plaza. At fiesta time, when everybody likes to dress in costume, you cannot tell artists from cowboys.

On market days so many Spanish-American farmers in wide-brimmed black hats cluster beneath the Plaza's shady arcades that a stranger might imagine himself in Spain were it not for signs like J. C. Penney and Ruth's Beauty Shoppe.

Louning, long-haired Pueblo Indians wrapped in cotton blankets exchange stare for stare with visiting easterners, while working Indians in blue jeans drive trailer trucks through the streets.

Twice daily a horse-drawn stage leaves the Plaza on a "rubberneck" tour of San Geronimo de Taos (Taos Pueblo), close by.

Shop windows facing the square bulge with paintings put up for sale by artists. Other canvases bedeck hotel lobby and cafe walls.

By night the Plaza becomes so quiet that, in the words of "Doughbelly" Price, the town wit, "you can hear the notes falling due at the bank."

## Moon, Stars, and Neon Light the Plaza

When the last neon light flickers off, only moon and stars provide illumination, for the Plaza has street lamps but no appropriation for current.

"We resent the influx of neons like a plague," one resident told me, "but we are happy at having no traffic lights or railroads. Sometimes snow clogs the highway and delays the mail, but who cares? Not I."

Behind mud walls shaded by rows of cottonwoods, Taosños lead lives of deep content. Ears of Indian corn hang drying beside their corner fireplaces. Their carved Spanish doors match heavy Spanish chests. Cool little canals flow intermittently through their lawns, and hollyhocks spring up between flagstones in their courts. Bowers of yellow roses bloom in their gardens.

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Seeing Our Spanish Southwest," June, 1940, and "New Mexico Melodrama," May, 1938, both by Frederick Simpich.





National Geographic Photographs by J. Barton Stewart

### Once a Year Santa Fe Banishes Care; Everyone Gets into Fiesta Dress

Strains of native music and aromas of food fill the Plaza; there is dancing in the streets. Indians pour in from the pueblos and "cowboys" from the East. Some lucky Spanish girl, one like these three beauties is crowned queen. Children costume dogs, pigs, and cats and stage a Pet Parade. One last laugh is given by the Historical Parade, whose floats lampoon public figures.

"We never have a dull moment," an artist-housewife told me. "Answer your party-line phone; you hear five receivers lifting. With spirited three-cornered conversations, we women learn all the gossip."

Coronado's soldiers discovered the Taos Indian community in 1540, and later they built their own town near by. At old-time fiestas they danced and gambled, and they traded with visiting Indian warriors.

Later a foot-loose, whiskered breed of Americans, the fur-trapping mountain men, trooped in with their long rifles and packs of beaver

in quest of riches, romance, and "Taos lightning" (liquor).

Kit Carson, a leader of that tribe, made his headquarters in Taos, and his home, converted into a museum, stands on the main highway.

### Two Artists "Discovered" Taos

Founders of the art colony and living links with Taos's colorful past are Ernest L. Rhinenschein and Bert G. Phillips. In 1898 they were partners in a strange adventure; after half a century they remain friends and neighbors. "Blumy" and "Bert" the whole town





### Here the Atomic Bomb Is Developed. People in Los Alamos Lead Almost Normal Lives

Residents have no unexpected visitors, no graveyards, no unemployment, and no real-estate taxes, but they do have a bountiful crop of babies. By showing passes, they are free to leave the reservation as they please; yet some complain of feeling shut in (page 813). Uncle Sam, as their landlord, makes all repairs cheerfully; his workmen even clean up muddy footprints. Last June Los Alamos won county government

calls them affectionately. Like Titian in his old age, they go on painting (page 786).

Blumenschein, who told me their story, played ball with the Taos Indian team until he was 50 years old, and he still plays tournament bridge and tennis.

"As art students in Paris," he said, "Bert and I struggled to be synthetic Frenchmen painting French peasants. One day, having had enough, we resolved to paint Mexicans instead. Sailing home, we rode a train to Denver, then struck out for the border in a covered wagon. Neither of us had ever hitched a team before.

"We had reached New Mexico, and Bert was driving over a mountain trail, when a wagon wheel broke. While Bert stood guard over our belongings, I mounted one of the horses, picked up the broken wheel, and set out for repairs in Taos.

"Today, half a century later, I can still feel the heavy wheel's tug on my arms across 30 painful miles. Even more vividly, I remember my first impression of Taos. The Plaza seemed electric with excitement and romance. I felt that I had entered a different world.

"As I surveyed the greedy gamblers, costumed Spaniards, and buckskinned Indians,





### Founders of the Taos Art Colony Revive a Partnership Begun Half a Century Ago

As students in Paris, Bert G. Phillips (standing) and Ernest L. Blumenschein resolved to paint the Southwestern scene. Reaching Denver, they struck out for the Mexican border by covered wagon. A broken wheel necessitating repairs in town, led to their discovery in 1898 of the color and glamour of Taos. Hundreds of artists, following them, made Taos a little adobe Paris or Greenwich Village (page 164).

my fingers itched to put their faces on canvas.

"This, I knew at once, was what I wanted to paint and where I wanted to live. But on return to camp with the mended wheel I concealed my impressions from my partner, for I wanted to see if he would react as I did."

#### Apartment Life in Taos Pueblo

"Once I saw Taos I never wanted to live anywhere else," said Phillips, whom I found completing an Indian portrait in his skylighted studio, the remodeled house of a buffalo hunter.

"From my first glance at the Pueblo," he said, "I knew I had to be a painter of Indians.

I learned to love their carefree ways, their harmony with Nature."

The Taos Indians, whom Phillips so loves to paint, carry on an apartment-house existence already old when white men arrived.\*

On their valley and mountain lands a thousand tribesmen tend their corn and animals (pages 811 and 818), including a buffalo herd. Their two community houses, of four and five stories, face each other across Rio Taos.

These houses were designed in warlike days

\* See "Indian Tribes of Pueblo Land," by Matthew W. Stirling, NATIONAL GEOGRAPHIC MAGAZINE, November, 1940.





Indian Pueblos, Spanish Villages, Atom Laboratories—That's New Mexico's Fiesta Land





**Santa Fe Hangs Zozobra, Fiesta's High Priest of Gloom, for Burning at the Stake**

This pyrotechnic giant, who embodies the people's cares, is sacrificed each year that revelers may have fun. His 40-foot timber skeleton is stuffed with straw and wrapped in muslin. Burning at dusk, Zozobra writhes and groans with realistic anguish, while "moaners" blow noisemakers. His Spanish name means worry.





**Santa Fe Visitors, Losing No Time Getting into Cowboy Clothes, Watch a Weaver at Work**

Mannuel Muller, demonstrating at the Southwest Arts and Crafts souvenir store, finishes a blanket in the style made famous by the farmer-weavers of Chimayo (page 823). So tightly woven is the Chimayo blanket that it seems as stout as iron. Elsewhere in this store Indians fashion silver and turquoise jewelry.

to be fortresses of molded adobe, giving entrance only through hatches in the flat roofs. In recent, safer times, doors and windows were cut, but outdoor ladders still serve as staircases and elevators.

Dirt courts facing the apartments are dotted with conical adobe ovens in which women bake, children play, and dogs drowse. Skins, crops, and firewood dry on pole-supported platforms (page 792).

#### **The Kiva, Relic of Pre-Christian Times**

Ladders projecting out of circular underground chambers point down like arrows to the kivas, those walled but windowless ceremonial pits where elders teach sons the tribal secrets.

An air of mystery surrounds the kiva, because white men get no welcome there.

Every pueblo has one or more of these structures from which the earth-born gods were believed to have emerged into the sunlight. Despite centuries of Christian teach-

ing, kivas endure as altars to old tribal gods.

Courteous but never fawning, Taos Indians may invite you into their apartments, many furnished Grand Rapids-style (page 830).

#### **Santa Fe: Señoritas in Blue Jeans**

Santa Fe, the Spaniards' Royal City and the old-time trail drivers' end of the road, was my next stop.

A century ago the bullwhackers of the Santa Fe Trail\* unloaded their dusty caravans at the Plaza and held revelry with the Conquistadors' dark-eyed granddaughters, dressed in Spanish finery.

To see the great-granddaughters, I went to the same Plaza. I found them often enough in blue jeans rolled to the knees. Their younger brothers, voicing the latest American slang, wore baseball caps and sweat shirts.

\* See "Santa Fe Trail: Path to Empire," by Frederick Simpich, *NATIONAL GEOGRAPHIC MAGAZINE*, August, 1929.



Before the *Mayflower* landed at Plymouth Rock, the pioneers laid out Santa Fe, using a plan drawn up in Madrid by royal order.

Today heavy traffic, proceeding without stop-and-go lights, lumbers through narrow streets designed for the Conquistadors' horses and oxen. The *mañana* tempo lingers; no one hurries much.

Since 1610, year of its founding, Santa Fe has been a capital, the oldest in the Nation. It has flown the flags of Spain, Mexico, and the Union, and briefly it belonged to the Confederacy.

Seat of government was the Governors Palace, a rambling one-story adobe structure on the Plaza. Here, when he was the American governor, Lew Wallace wrote parts of *Ben Hur*. In recent years the Palace has been a State museum of history and archeology. Says a marker: "From 1610 to 1910 the residence of over 100 governors and captains-general. Oldest public building in the United States."

#### Santa Fe Celebrates Its Liberation

Here in 1680 Spanish colonists stood siege by 3,000 rebellious Indians. Abandoning Santa Fe, they fled to old Mexico. Twelve years later Captain-General Diego de Vargas led a triumphal return.

Since 1712 De Vargas has been commemorated with a fiesta (pages 784, 794, 795, and 821). Each Labor Day week end the Plaza is given over to street dances, parades, and Indian markets; and the captain-general, impersonated by a citizen, rides again.

Santa Fe zealously preserves a statue of the Virgin, known as La Conquistadora, which, recent research has shown, came to New Mexico with the first Conquistadors. Saved by a refugee during the siege of 1680, she was brought back in triumph by De Vargas in 1693.

I saw La Conquistadora wearing a handsome wardrobe presented by women of her parish. Housed in St. Francis Cathedral, she stood in her own 1717 chapel preserved from the old *parroquia* (parish church) which used to occupy the site.

Archbishop John B. Lamy, the "Bishop Lator" celebrated in Willa Cather's *Death Comes for the Archbishop*, built the stone cathedral around the adobe *parroquia* so that Mass might be celebrated without interruption. Later he demolished the adobe church-within-a-church and proudly left the stone standing alone.

But fashions change. Santa Fe has turned its back on stone in favor of adobe.

Adobe's renaissance followed the restoration


of the Governors Palace a few decades ago. Writers and painters built mud mansions. The Church, Catholic and Protestant, became an adobe convert. The most fashionable hostelry went up in adobe style. Uncle Sam contributed a handsome post office to match. Even filling stations and auto courts were built in the old-new manner. Now Santa Fe looks more than half adobe.

#### City Glorifies Humble Mud

Anglo-Americans have learned that nothing insulates a room from the sun more effectively than a heavy sheet of earth. Even on the rare hot day some eastern visitors walk into an adobe hotel room and demand, "Shut off that air-conditioning."

Adobe similarly muffles sounds; voices always seem pleasant.

Six thousand years ago, before men knew how to build with stone, Egyptians constructed their Nile-side homes of sun-dried brick. Mesopotamian and early Greek civilizations were founded on humble mud building blocks.

The art of making such bricks descended from Egyptians through Moors to Spaniards. The very word *adobe*, from the Spanish verb *adobar* (to plaster), has been traced to the Egyptian hieroglyph , transcribed *dbt*, and probably pronounced *dōbe*. The New Mexico brickmaker uses the simple wooden mold of Egypt.\*

Our own Southwestern Indians used dried mud for centuries before white men arrived.

When the first explorers cautiously surveyed New Mexico, they found Indians in apartment houses, later called pueblos (towns). Their earth-brown walls reflected sunshine so goldenly that the pueblos must have seemed built of the precious metal (page 792). Coronado, lured by such a chimera, sought the "seven golden cities of Cibola" in vain.

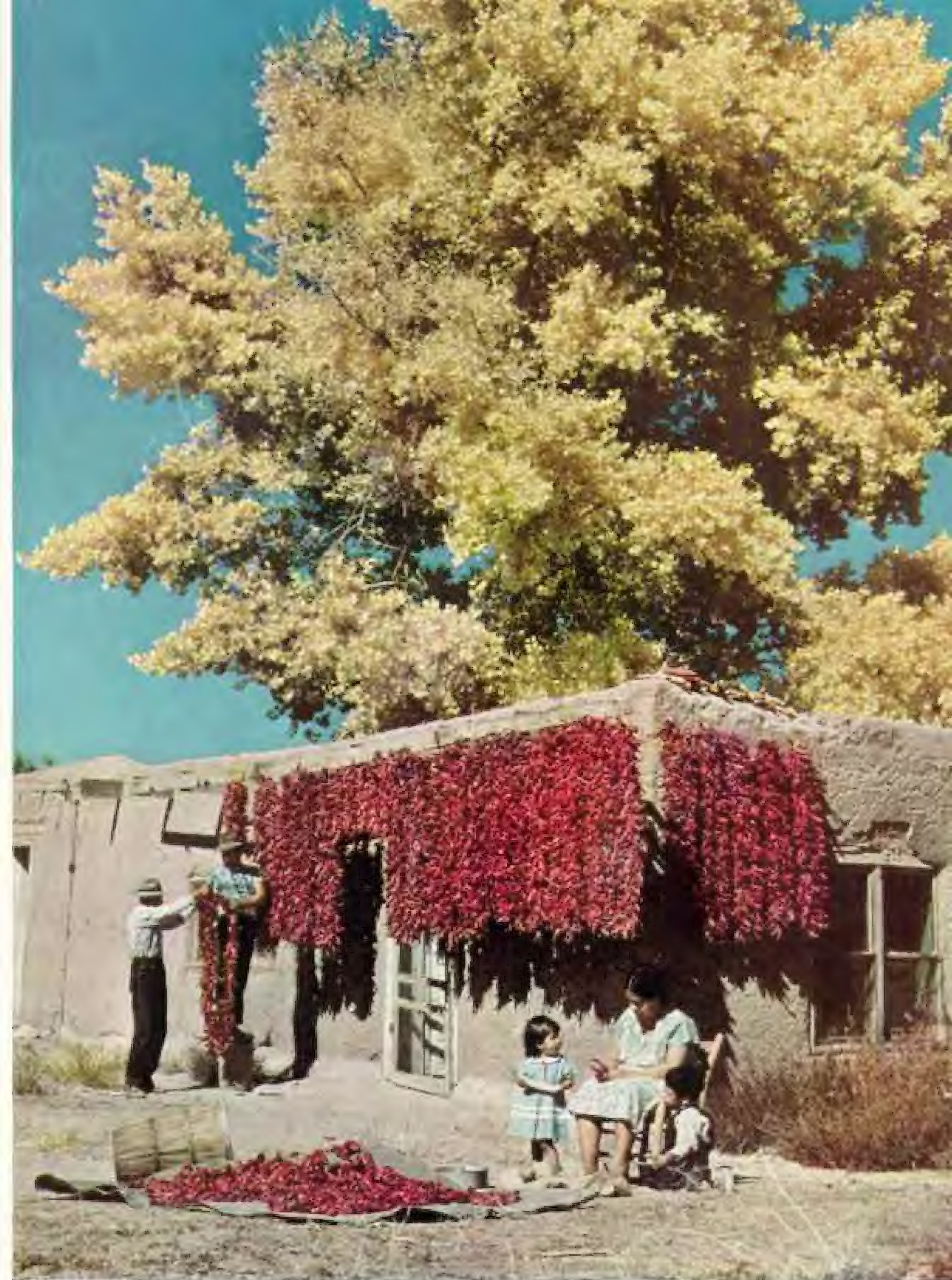
#### Spanish Architecture Wed to Indian

In those days the Indians built without bricks, pouring big blocks of mud like wet concrete. Franciscan friars taught them to mold bricks in the Biblical manner, using a straw binder.

The amalgamation of architectural styles, Spanish and Indian, became known as Spanish Pueblo, the inspiration of New Mexico's handsomest buildings. This fashion retains the Spaniards' *vigas*, the heavy wooden beams supporting the ceilings, and the *cavales*, rain-spouts jutting from the eaves. Terraced masses and flat roofs copy the Indian mode.

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Daily Life in Ancient Egypt," by William C. Hayes, October, 1941.





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Reproduction by J. J. J. J. J.

### October's Drying Chile Peppers Emboss New Mexico's Adobe Walls with Scarlet

In Pilar grows this golden, soft-timbered cottonwood. Lacking better materials, the Spanish pioneers built of sun-dried mud. Today the poor man's necessity is the rich man's luxury. Adobe is the fashion.





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Ketchikan in June 1916

### Sunset's Fading Glean Gilds an Indian Apartment House in Taos Pueblo, Which Spaniards Discovered in 1540

Taos Pueblo doors are carved in walls that once presented solid adobe, but ladders still serve as outdoor elevators. Beshie oven (right and left) bake bread, and pole platforms store wool gathered on Taos Mountains (background). Visitors paid 25 cents to park.



Long-haired Taos Elders Bundle in Festival's Rainbow Blankets, Junior Wears His Hair Short Beneath a Baseball Cap

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Photomontage by Justin LaRue







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Illustration by Justin Locke

# "You Name It—We'll Wear It," Says Santa Fe at Fiesta. Styles of 1700 and 1949 Mingle in the Plaza

The adobe Palace of the Governors (left), now the Museum of New Mexico, has flown flags of Spain, Mexico, and the United States. Here in 1680 some 2,000 Indians besieged the Spanish settlers and drove them from the city. Twelve years later the Conquistadors returned. Since 1712 Fiesta has celebrated the reconquest.



## To Children, Paleface or Redskin, Fiesta Is a Circus in Which They Are Gay-costumed Performers

Indian youngsters, sparkling in pueblo dress and carnival ribbons, which a Santa Fe parade (from the arcade of the Governor's Palace. At Taos Fiesta the boy at left "rides a pink horse," as in the movie of that title inspired by Tio Vivo, Taos's ancient, hand-cranked merry-go-round imported from Spain. Well-known artists paint and repair the horses as reverently as they might restore a medieval masterpiece.

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Illustrations by Zuziia Karkia





## Copper Kettles Glow Like a Thousand Setting Suns

New Mexico, which calls itself the Land of Enchantment, makes catering its number one industry. Scenery and climate lure tourists by the trainload. Hotel men, dude ranchers, guides, and Indian jewelry salesmen all make a living attending to their needs.

In the dry northern valleys visitors are introduced to cool adobe walls. In mountain-side guest ranches, where heavy rains would wash mud plaster away, they sleep in snug log cabins and welcome a fireplace even on summer nights.

For food, the travelers may order most any American dish (observe the spicy lobsters flown fresh from the Pacific coast), or the Southwest's own Mexican specialties. Steaks, contrary to expectations, are as dear in the ranch country as in the East. But Rocky Mountain trout, fresh, fat, and golden-fleshed, are surprisingly cheap.

A number of New Mexico restaurants attire their waitresses, whether from Brooklyn, Boston, or Baltimore, in Spanish costume. Swan Lake, a guest ranch near Alcalde, employs Spanish-American help. Mrs. Hamilton Garland, wife of the owner, collects copper ware as a hobby.

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## From Hand-woven Woolen Ties to Indian Handicrafts, New Mexico Exploits Its Native Industries

Ties from McCracken Textiles, here being stocked by an Indian employee, go from Santa Fe to all parts of the Nation. Right: customers examine turquoise and silver jewelry at the Original Curcio Store. Horset and eagle dancer were painted by a Tewa Indian. Wooden statuettes (left) are Hopi-made.

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Illustration by Emily Luker











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Exhibition by J. H. Jones

A Forest Fire Without Flames—Autumn's Shimmering Cottonwoods North of Taos





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Illustration by Austin Kuhn

Vacation Time's Cowgirls Park Their Gasoline Mounts at Bishop's Lodge, Santa Fe, and Watch a Rodeo from the Corral Fence



Like a Doll Hospital Is a Repair Shop for Santos, Bizarre Saintly Figures Carved Long Ago, Some by Penitente Artists

Isolated from conventional church art, New Mexicans created naïve but arresting art objects, prized today as outstanding primitives. Mrs. Marjorie F. Tichy, of the Museum of New Mexico, Santa Fe, repairs one of the New Mexico Historical Society's figures. A halo surrounds the figure of Nuestra Señora de Guadalupe.

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Restoration by Joseph Yacobi







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# A Bathers' Oasis in the Desert Is San Juan Ranch Pool Near Tesuque, North of Santa Fe

With only 14 inches of rain a year, the Santa Fe area is no beach resort. Rio Grande's swift waters are treacherous, mountain creeks icy, and desert streams mere trickles (page 818). This guest ranch, pumping its water from a well, offers an afternoon swim as well as an evening meal.



Red Men and White Men, Who Met Here on the Battlefield in 1847, Join in an Art Class Below the Taos Mountains

Indian pagentry has turned to Taos a colony of artists. But centuries before, Pueblo painters were adorning cliffs, kivas, and ceramics. Louis Kibak conducts this class.

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Illustration by Arthur J. Barker

### Blue Sky and Naked Red Earth Compose a Dramatic Spectacle in the Chama River Country

Northern New Mexico's landscape changes abruptly. Snow peaks, open slopes, sagebrush plateaus, yawning canyons, and dunes, volcanic craters, and green irrigated fields lie within sight of one another. Man and horse have been lost in a man's land below the sandstone-gypsum cliffs.



## A Gilt of Flash Bulbs Achieved This Gallery of Smiles in Chimayo, an Old Spanish Settlement

Some of these schoolboys may be descended from the Conquistadors who marched into New Mexico centuries ago. Their fathers, like their great-great-grandfathers, are farmer-weavers. So were the Indians who lived in Chimayo before them. Though Spanish prevails among the older people, school is conducted in English.

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Giftedness to Justice Locke







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Illustration by Zoltan Lovas

#### ★ Indians Sell Art on Santa Fe Walks

Pure Indian art, as a rule, omits background and ignores perspective yet it captures speed and rhythm, even the desert's heat. Favorite subjects are hunting scenes, dance ceremonials, and horses (page 797).

#### ♥ This Wooden Indian Sells No Cigars

Motorists passing through Tesuque often mistake dummy for man. Wearing a horse-tail wig, he goes by the name White Horse. Like a Charlie McCarthy, he sits on the lap of his creator, Andy Anderson, carver.





A change in architectural taste set in when the American flag ran up over the Governors Palace in 1846. Frontiersmen tried to make Santa Fe look like a Midwest town. Down came adobe; up went frame, brick, and false front; later a counterfeit Greek temple, or bank. Some raw 1890 fronts still mar the Plaza.

#### A Simple Mud Home May Cost \$1,000

By making use of their own land and labor, Spanish Americans build their small, square adobe homes, some for around \$1,000 if finished without bath.

On the outskirts of Santa Fe every vacant lot seems to be a brickyard.

I watched papa, mama, son, and daughter all engaged in making adobes. The hole which they dug for material became their cellar. In wooden molds they mixed the reddish clay with straw and water, then laid the bricks in the sun to dry. They buried walls in trenches and topped them with vigas. These pine beams they covered with split-cedar rafters, tar paper, and eight inches of dirt.

Weeds and flowers struggled on these dirt roofs. On one I discovered an ants' nest rising in volcano shape.

In the artists' section I admired fine homes, some with broad picture windows, corner fireplaces, and built-in adobe couches. Across the road stood the hovels of the poor. Mansion and shanty blended harmoniously with the soil from which they came.

Straight adobe has one serious drawback: the dry earth cannot withstand much rain. Every rain turns the plaster to mud and erodes the roof edges. Santa Fe's scanty 14 inches a year are enough to cause trouble.

"Pueblo Indians solve the rain problem by having the women do a replastering job," a Santa Fe architect told me. "But nowadays the maintenance of adobe at prevailing wages does not pay. We architects use a number of anti-erosion devices, none of them entirely satisfactory. In one method, chicken wire is nailed to mud walls and finished with an adobelike stucco."

#### Los Alamos Tames the Atom

From old Santa Fe the Southwestern style has spread 25 miles to the new Federal city, Los Alamos, some of whose modern residences copy the flat-roof adobe style (page 785).

Los Alamos, the Atomic Energy Commission's weapons laboratory and research center, supervises manufacture and assembly of our atomic bombs, using U-235 from Oak Ridge, Tennessee, and plutonium from Hanford, Washington, the atom's "powder plants."

This war-born boom town has been called the most important on earth. Its 9,000 residents include many of the Nation's top scientists.

Los Alamos has no graveyard, no unemployment, and no real-estate taxes. For lack of space, the dead are buried elsewhere; the jobless must get out; and Uncle Sam owns all the property.

This Federal city has a civilian manager, Capt. Carroll L. Tyler, who took the job in 1947 after 31 years with the Navy.

During the war, when the military had control, the city was so secret that its very name went unmentioned.

Homesick soldiers dubbed it "The Hill," a name which still lingers.

When Hiroshima was atom-bombed, great was Santa Fe's astonishment to learn that the weapon had been assembled so close by.

Los Alamos (meaning The Poplars) was a log-built boys' school in a wilderness until geography pointed out its advantages as the hush-hush capital of a mammoth secret enterprise. Its very isolation was Los Alamos's good fortune.

#### Enormous Canyons Rim the City

The city, 7,500 feet in the clouds, sits on an hourglass-shaped plateau in the Jemez Mountains. On all but one narrow side it is surrounded by canyons 200 to 500 feet deep, a natural barrier to prying eyes.

The main entrance, the highway from Santa Fe, is locked to everyone but credentials carriers, and the entire city is strongly fenced in. Security police guard the gate and patrol the canyons. Out-of-town visitors find it impossible to "drop in" on their friends without due notice.

Once checked in, I was free to roam the streets unescorted, but, like most other visitors and many residents, I was refused entry to the city's heart, the world's finest physics laboratory, where the most powerful bombs are devised.

I had been in headquarters only a few minutes when an explosion rattled windows, shook desks, and arched my brows into unspoken question marks.

"What you just heard," said a public relations officer, "was an ordinary construction blast. We have many of them."

"Though Los Alamos has assembled all of our atom bombs fired to date, not one has been set off here. Eniwetok is the proving ground."

\* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Operation Crossroads," 16 pls. in color, April, 1947; "Farewell to Bikini," by Carl Markwith, July, 1946.





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### Church and Salt Cedar Comfort and Shade Spanish Americans near Chinayo

These children, whose grandparents lived in medieval isolation, were born into a world of striped jerseys, breakfast-food prizes, and "Radio Special" transportation. Their people, formerly ruled from Madrid, Mexico City, and Washington, D. C., won statehood in 1912 and, with the vote, achieved wonders. Every election arouses their heated interest. They share New Mexico's highest offices with Anglo-Americans. The State Legislature is bilingual.





### Is Talpa Excited! A Tenth of Its People March in This Wedding Procession

The marriage of Maria Martinez and Jerry Duran was a memorable event in this old Spanish-American town. Automobile horns shrieked for hours as guests drove dizzily up and down the dirt road. Franksters briefly kidnaped the bride. Here the happy couple, immediately following the musicians, walks to an uncle's home for a reception. Little girls, two carrying babies, flank the company like military file closers.

"However, when a construction blast raised a mushroom-shaped cloud, outsiders were convinced we were firing atom bombs. We faced a lawsuit by a farmer who said our 'bombs' made his hens stop laying!"

Touring the city, I was surprised to find that sections had the raw, jerry-built look of a mining town. Most offices and apartment houses occupied army-type barracks festooned with crazy lean-tos and ells. Because the wartime builders questioned the city's permanence, they decided any shack was good enough.

As we drove along Canyon Road, which skirts one of the mesa's chasms, my guide pointed to a high wire fence bearing the warning sign "Danger. Contaminated. Do not enter." Here radioactive waste was dumped when Los Alamos was a temporary project.

The \$4,000,000 Community Center, de-

signed with ultramodern fixtures, had taken shape. The elegant tansorial parlor, some of its barbers in ice-cream pants, others in cowboy boots, played Los Alamos's own radio concert music. The handsome new bank issued checks bearing an atomic cloud background.

### Diapers Attest High Birth Rate

Residential sections gave evidence that alpha, beta, and gamma rays, if any, were not blighting the baby crop. In every other backyard young wives were stringing diapers.

Every visitor is solemnly told that the city is "notable for children, dogs, and atomic energy, in that order," and that it has one of the country's highest birth rates.

In one of the older prefabricated apartments I talked with Mrs. Lamar Floyd, a former New Yorker.

"All day long," she said, "I can enjoy the





Beneath Sky's Black Infinity Stands a Fabric of Logs and "Such Stuff as Dreams Are Made on"

The strange vision of these barn springs unexpectedly out of a mountain wilderness as motorists pass the isolated villages of Truchas (Spanish for trout). Truchas at 7,620 feet seems the jumping-off place into nowhere; its view extends 150 miles. Built mainly of logs, it is unique among Spanish America's adobe villages.





**Bouquets of Onions Hang Like Wash from a Laundry Line**

This farmwife lives in oaseslike Chinmaya, whose green orchards, blue hedges, yellow roses, and golden cottonwoods enchant visitors. Unaccustomed to the pressures of crowded cities, she takes her calm, unfrouthed village for granted. Centuries have wrought little change in Chinmaya; cars make the main difference.



**Boy and Goat Both Descend from Settlers from Spain**

In some remote communities farming methods go back so colonial days. An occasional wooden plow still breaks the soil. Cereals are cut by hand, and goats, circling through the straw, stamp out the grain. Goats as well as sheep, horses, and pigs were introduced into the Southwest by Spanish pioneers.





### Holiday Makers on Shaky Ladders Prowl the Ghostly Caves of Aboriginal Cliff Dwellers

A tour through Bandelier National Monument tells the story of New Mexico's pre-Christian civilization. Indians dug rooms in the volcanic ash and faced them with stone houses, long since crumbled. They grew corn, tamed turkeys, and wore cotton. For undiscovered reasons the entire tribe moved away (page 814).





### Careworn, Toil-marked, She Bears Her Sorrows Secure in a Simple Faith

To travelers venturing off the beaten trail, the Spanish-American country offers many unexpected sights. The rude Penitente cross and little shrine which bear the weight of this darkling sky stand near Chimayo.

Sangre de Cristo Mountains from my window. Winter's snow in the ravines forms an immense white thunderbird.

"In summer it is breath-taking to smell the fresh rain on the brown earth. The air is always exhilarating."

"Though we can go to Santa Fe any time we like," said her husband, "we sometimes feel shut in. We have become joiners, therefore. Name your hobby—chess, bridge, camera, ski, or world federation—we have a club to fit it, 72 in all."

"What about the servant problem?" I asked.

"We have no complaint," Mrs. Floyd answered. "Our Indian maid cheerfully works seven hours a day for \$5."

Some 500 Indians are on the job as janitors, laborers, or maids. A few with college training serve as architects, engineers, or research assistants.

Each evening the Indians, pueblo-bound, join a long commuters' caravan of model T's, trailers, and luxury cars clogging the main exit road.

### The Indians Dance Their Prayers

"Our maid speaks better English than I," one resident told me, "but at quitting time she goes home and takes part in her tribal ceremonies."

Pueblo Indians were dancing when the Spaniards arrived and, despite occasional re-



pression, they have been dancing ever since.

Though many Indians devoutly accept the white man's god, they preserve the civilization of their ancestors.

This ancient faith sustains a pride in race, purity of blood, and a noticeable independence.

Scarcely a week goes by that some pueblo does not celebrate a Corn Dance or other festival with elaborate costume and ritual. The dancers decorate their bodies with feathers or skins to resemble birds or beasts (page 822). They paint or mask their faces, and they chant the sacred words of ancient supplications. They dance to bring the rain and dance a thanksgiving for the harvest. Women dance barefoot to absorb fertility from Mother Earth (pages 815 and 817).

#### Lo, the Poor, Pestered Indian!

On some festival days the pueblos keep open house. White visitors pour in, parking in the wrong places, understanding almost nothing. Whatever the bedeviled Indian thinks, he conceals his feelings beneath a baffling mask of politeness.

To a few initiated spectators the Indian dance conveys the meaning of a hymn to Nature and her changing seasons. It gives a glimpse into their own ancestors' pre-Christian rituals.

As one of the uninitiated throng, I watched the Tesuques executing a borrowed Comanche war dance.

A sizable crowd was drinking a concessionaire's bottled soda when the dancers emerged from a kiva with zigzag steps. Braves wore feather bonnets and jingling sleigh bells. Wives and children danced with them. Oldsters drummed and chanted secret words. For fear that I might reveal some recondite word, the Tesuques forbade me to take notes.

Our attention was fastened on a dancer who had painted his body a ferocious green on one side, a barbaric yellow on the other.

"Look!" exclaimed the woman beside me. "Even his face is painted. That reminds me: I think the Federal tax on cosmetics is unfair to women!"

At the sight of the war make-up, visiting paleface boys were all eyes. These playtime cowboys, who in fun had made many a redskin bite the dust, were well behaved, even toward little Tesuque girls with bobbed hair and shoe-button eyes.

Some dancers are accomplished clowns; and I was informed that the Tesuques, giggling and howling, have burlesqued their visitors by dancing beneath umbrellas and blond wigs.

Just outside Santa Clara Pueblo I met the happy English bride of an Indian war veteran.

Mother of two half-Indian children, she said:

"I did much better than I expected. I thought I'd be living in a wigwam, but here I share a duplex adobe apartment. I have a washing machine, vacuum cleaner, electric refrigerator, and automobile—things I wouldn't have had at home. No, you couldn't drag me back to Liverpool."

#### Old Indian Caves a Fantastic Sight

Though most of the Indians live beside the Rio Grande, their ancestral homes lie in such isolated places as the Jemez Mountains.

Driving into the Pajarito Plateau one day, I saw hundreds of long-abandoned Indian caves puncturing the cliffs. In their dream-like setting these caves suggested galleries of rocs' nests or the embrasures of a Titans' fortification.

Eons ago the plateau was colored by the outpourings of a giant volcano. Tiny streams, etching deep canyons in the ash, laid bare walls of sunset pink and sepulchral white.

I tested the white ash in my hands; it crumbled like cheap concrete. Rain had carved it into wigwam shapes and pockmarked it like a Swiss cheese.

Primitive cave men found this soft material easy to work and the cliffs easy to defend. The first settlers dug holes into the bluff, entered them by ladders, and in times of danger drew the ladders up after them.

Later they quarried soft blocks of tuff and lined the cliff with houses, using the caves as back rooms. As their numbers increased, they built an apartment house with at least 300 rooms on the ground floor. This house long ago collapsed into rubble.

#### Scientists Restore the Scene

Archeologists, digging through the tumbled blocks and shattered pottery, have reconstructed the bones of this old civilization in a forested canyon called Bandelier National Monument (page 812).

Here migrating pueblo folk settled centuries ago to take advantage of cliff defenses and running water. Rio de los Frijoles trickled through their valley. Using its waters, the Indians irrigated corn, squash, and beans. They domesticated dogs and turkeys. In caves, the women wove cotton cloth; you may still see the marks of their looms.

Our party explored smoke-blackened caves, gazed at fading cliffside pictographs, climbed ladders into reconstructed houses, and toured the crumbled apartment house.

Feet dusty and aching, we waded in cool Frijoles Creek. Tall pines and cottonwoods





**Rain Priest, Exalting the Sacred Wand, Prays for Showers. Dark Clouds Seem To Answer**  
 San Ildefonso Indians hold their Corn Dance. The woman steps barefoot to draw fertility from Mother Earth. Men's rattles imitate the swish of rain. The wand, with fox skin, feathers, and sea shells, represents all forms of life.



## A Spanish Church's Mystic Beauty Stuns the Eye

Seen from a roadside, one of New Mexico's oldest churches may appear to be no more than a huge, weathering lump of clay. But a peep through the carved doors, edged on rusty hinges, reveals a dazzling vision, like an unexpected glimpse into heaven. The odor of cedar rafters in some churches is like incense.

Such enchantment is wrought by El Santuario in Chimayo. Its gloomy graveyard entrance is guarded by two towering cottonwoods. Between them runs a small canal to which thirty sheep race at twilight like Biblical lambs.

Within the sanctuary the eye is dazzled by rich colors. Brown pine beams overhang thick white walls. The recessed altar screen is delicately painted in soft pastel shades. Canales cast golden gleams on saints and Virgins. Kneeling women, whispering prayers, huddle themselves in black.

In 1816 El Santuario was built as a private chapel on the supposed site of a ruined Indian pueblo. Pilgrims swarmed to the place because earth dug from a hole in the adobe floor of an altar-outlet was supposed to have curative powers.

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# San Ildefonso's Corn Dance Celebrants Bear Their Patron Saint Through the Pueblo Beneath a Canopy of Honor

Pueblo Indians, baptized as Christians, accept the white man's saints even while carrying out their old tribal rites (page 403). During dances in their fertility dances they may be seen kneeling at their saint's shrine. Evergreen boughs carried here symbolize longevity and everlasting life.

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Gifted by the Pueblo Indians







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Illustration by Arthur L. Larkin

### A Thousand Thirsty Sheep, Making Their Autumn Trek from the Mountains, Joyfully Water in Jemez River

In this parched country precious water dictates the lives of men. To Indians rain is a god. While men vie for rights to the snow peaks' watershed, source of the Rio Grande. In drought times the desert's creek beds are enormous furrows in which the meager trickles flow.



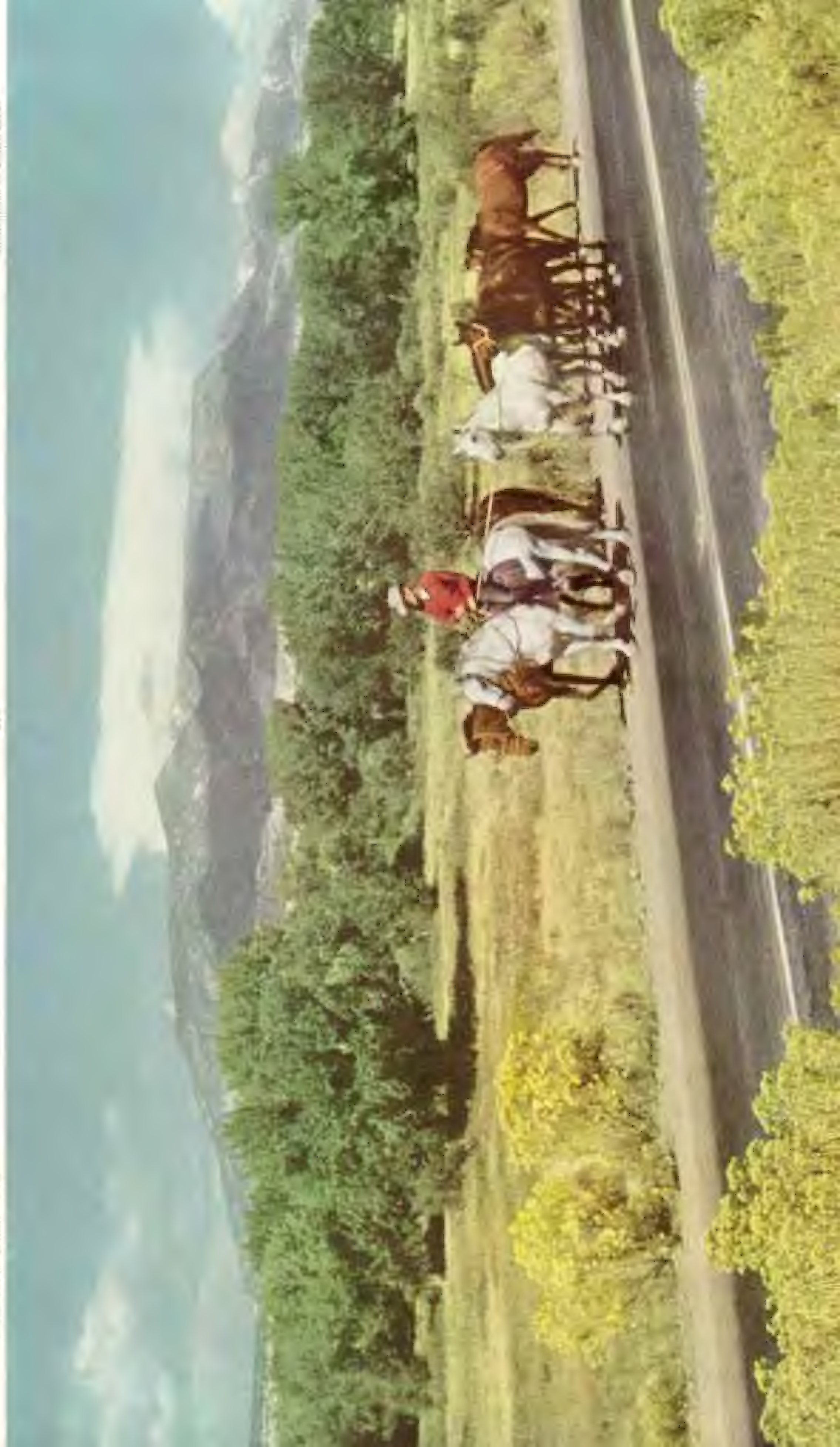
## As Cloud Shadows Empurple the Jemez Mountains, a Rancher Moves His Riding Stock Down a Flowering Yellow Road

Watered by the Chama River, the woodland contains many pines, a nut-bearing dwarf pine. For centuries Pueblo people have harvested its seeds, known in the East as Indian nuts. Giddentrunklike rabbit brush, a kind of jock villets, lines the Española-Albuquerque highway. Navaho used it as a yellow dye.

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Photograph by Fred Loefer









Father and Son Celebrate a Dance at San Ildefonso Pueblo and Play Cowboy at Santa Fe Fiesta

Holding his daughter's green bag, the boy has emerged from the tribe's secret-ritual chamber.

© William Hargrave/Ally Bette



Reeltime by Justin Loebe







Plumed Teen-age Warrior, Bells Jingling, Performs a Dance at Taos Pueblo



shaded us; four-o'clocks bloomed wild all around. Birds sang; the brook murmured.

"What a perfect spot," we mused. "Why should anyone leave?"

By the year 1600 the cliff dwellers had deserted their Eden and retreated to the Rio Grande, where water always ran. Did they suffer disease, soil depletion, famine, drought, or invasion? No one is sure of the cause, but drought and raids were certainties. Nomadic enemies, who reaped crops with bows and arrows, plundered the pueblos for warehoused grain.

### Medieval Spain Survives in the Hills

Leaving the Indian country, I toured remote Spanish-American villages at the foot of the Sangre de Cristo Mountains. I drove through Penasco, Trampas, Truchas, and Cordova, each as Spanish as its lilting name. Grandmothers wore black shawls greening with age. Anglo-Americans were nowhere in sight. Nothing had changed, I imagined, in the last 200 years.

At harvest time herds of threshing goats trampled grain from chaff, and in some villages scarlet strands of chile peppers garlanded outer walls (page 791).

Each community irrigates its green valley, damming a mountain stream with brushwood barricades. Between these valleys the wilderness lies unbroken. Difficult trails left the towns isolated for centuries (page 810).

Even today a New Mexico guidebook describes the Trampas-Truchas road as "dangerous . . . safer as a pack trip."

Not yet having read the guide, I undertook the trip with no misgivings. Soon I found my automobile roller-coasting along a dirt-top skyline drive built across the summit of a ridge. There was width for one car.

Not a rival motorist, but a hundred goats compelled me to stop in the midst of nowhere, while the herd's three canine guardians attacked my car savagely.

In Chinayo, which knew the loom centuries ago (pages 789, 805), I found the weaving art still flourishing. Every other family seemed to have its hand loom.

### Santos: New Mexico's Primitive Art

Here I visited El Santuario, a chapel noted for its Santo Niño (Holy Child), to whom farm families look for bountiful crops (page 816). Chanting prayers for rain, they parade the figure through dry fields by night.

Childless wives make pilgrimages to El Niño. By custom, the woman whose prayer is answered dresses the statue in a new pair of slippers, taking the older pair for her own

child. I saw the infant Jesus attired in baby shoes. Beside Him stood a larger Cristo in men's coarse cotton socks and moccasins.

Within recent years remote Spanish villages have witnessed a collectors' hunt for those carved and painted saints which here are called *santos* (page 801).

Santos grew out of the pious Spanish colonists' need for religious statues at the end of the 18th century when Spain and Mexico ceased transporting new ones across seas and deserts. In those days *santeros*, or saint makers, wandered from village to village, each with his burroload of images.

As the *santeros* lost touch with conventional church art, their primitive carvings took on the naïve look of children's art creations. Sometimes grotesque, often out of proportion, they were nonetheless intensely human. Santos grip the imagination, compel attention.

Such statues are made no longer. The native art perished when the American occupation opened the gates to machine-made substitutes.

Today the old figures fetch fancy prices. I saw one Joseph, with the Child perched on his shepherd's crook, whose owner reported she had refused a \$1,000 offer.

In one collection I inspected a crucified San Acacio, a Christian martyr in Roman times, carved with beard, mustache, and black hat to resemble a Spanish soldier of the 19th century. Another crucified figure had a wound for piercing with a spear. A third exposed a throbbing heart operated by a string. Other *santos* had flexible arms so they might be taken off their crosses and laid in coffins.

### The Death Cart, Made by Penitentes

Prize of the collection was a large carving called the Death Cart. In it rode a yellow-wigged, glass-eyed Death, represented as a grisly archer (page 828).

With sly, cruel mouth, decayed nose, unkempt hair, and head too tiny for the body, this figure was utterly frightening.

Death's bow and arrow, replacing the conventional scythe, seemed custom-made for the Indian country, where no pioneer knew when an arrow might seek his life.

The cart was a creation of the Penitentes, a Spanish-American lay brotherhood, of whom many eerie tales are told.

During the Easter ritual, when Christ was in His tomb and Death triumphant, the Penitentes dragged the cart, with ropes slung over shoulders, to a place of penance they called Calvary.

Every Penitente village has its secret meeting place, like the *kiva*; this is called the



*morada*. In such a chapel the Cart is kept.

During Lent the Penitentes, like Christ, drag heavy crosses uphill. They lie on thorns. Dressed in white shorts and black hoods, they flog themselves across bare backs with yucca lashes.

"The blows sounded like the thud of a medicine ball thrown from belly to belly in a gymnasium," said one eyewitness who had spied upon a ceremonial.

"Tradition says," he continued, "that Penitentes used to nail men to the cross. Whether nails were used or not, I did see a volunteer tied to a cross. He stood his martyrdom until he fainted."

Penitentes are a living counterpart of the *santos*. For lack of new statues, they created their own. For lack of priests, the unlettered mountain folk strayed into practices as primitive and realistic as their own *santos*. Though these men were extremely devout, intending no harm, the Church years later felt it necessary to denounce their practices as offensive.

#### Padre Traces Ancestors Back to Spain

To learn the history of the Spanish Americans, I talked to one of their race, Franciscan Father Angelico Chavez. As an unofficial archivist at St. Francis Cathedral, he was translating yellowed Spanish documents, throwing new light on Church and State history (page 830). His research has upset previous theories on the origins of La Conquistadora and the Penitentes. I have used his versions.

By exploring the pioneers' records, Father Chavez has traced step by step his paternal and maternal ancestors to 16th-century Spain.

"If I told you all my forebears were illustrious," he said, "you would not believe me; so I shall admit I have uncovered some scoundrels."

"Anglo-American visitors," the padre continued, "take one look at our faces and instinctively label us Mexicans. Many of us resent the description unreasonably, ignorant of the fact that true Mexican culture has been superior to ours. Yet, apart from this fact, we are right in not considering ourselves Mexicans, since we lack the national outlook of the great country to the south. Actually, we were Mexicans for only a few years in our history, from 1821 to 1846, and had nothing to do with the revolt against Spain."

"New Mexico was always an isolated outpost. Supposing the United States had never taken over, we would be an island of 17th-century Spain."

"In the beginning, the Spanish Crown granted immense tracts in New Mexico to the

aristocrats. These men, owning everything in sight, were called *ricos* (rich men). They built great adobe ranch houses and lived like feudal barons. All their work was done by their followers, who tilled the soil like peons and possessed nothing but their debts.

#### Gone Are the Aristocrats' Mansions

"But times and empires changed. In 1821 Mexican rule succeeded Spanish; in 1846 the United States took over. Feudalism perished, at least in name.

"Today the *ricos*' mansions are gone; scarcely an adobe is left. Their limitless lands became so divided and subdivided that fence rows appeared to occupy half the cultivated fields. But new *ricos* have replaced the old. Since 1846 Anglo-Americans with money and know-how have been buying up the land. Native New Mexicans, with a few exceptions, are losing their ancient inheritance.

"Some of our leading families, it is true, descend from the *ricos*, and some directly from the Conquistadors. Even among the common folk you may observe blond heads and blue eyes, red hair and freckles. These are a heritage from the Celtic part of Spain, not the legacy of some itinerant Irishman.

"All of us centuries ago lost touch with our cousins in the Old World. So Americanized are our young people that they speak English among themselves, using Spanish only in the presence of their parents.

"Our Spanish idiom remains so antique that I have no trouble reading the pioneer documents. Appalachian hill folk preserving Elizabethan vocabularies are your English-language counterparts."

#### The "Anglo" and How He Dresses

The Anglo-American, New Mexico's third population element, takes pride in carrying on no neighborhood feuds with Indian or Spanish American. Born, more than likely, somewhere else, he has learned to love New Mexico's leisurely way of life.

A Spanish-costumed waitress from New York told me, "Wild horses couldn't drag me back to the hot subways, the shopping mobs."

"Life is so terribly simple out here," said a former Indiana woman. "One doesn't have to own a wardrobe full of the latest styles."

The Hoosier said it! Anything goes.

I sat in a Santa Fe hostelry watching the lobby parade.

A woman in barber-pole sweater strode in with slacks at half-mast. No one blinked.

Then a blonde in high Spanish comb strolled by, tucked up a long black lace skirt, rolled





### All Los Alamos Children Seem To Know the Answer. Aren't Their Dads Ph.D.'s?

The atomic city, home of 9,000 people, has 1,200 children in four schools. These youngsters, offspring of laborers as well as scientists, come from all parts of the Nation. They put up with a Quonset hut which supplements modern school buildings. "Our kindergarten class uses the progressive system," one teacher told the author, "and children are encouraged to keep horned frogs, turtles, rabbits, guinea pigs, chickens, and beehives as classroom exhibits."

down a stocking, and extracted cigarette and lighter. That attracted some attention.

In winter, I was told, a wealthy ranch woman parades her dusty blue jeans, scarred cowboy boots, \$20,000 fur coat, and \$100,000 in jewelry. Diamonds fairly drip from her elbows.

And the men? Here is blue serge under sweeping gray Stetson. A dude-ranch manager in cowboy boots and ten-gallon hat carries his businessman's briefcase.

Tieless sport shirt, impeccable suntan, dark glasses, and a well-barbered look identify "Mr. Los Angeles." The lounging Indian, who peddles turquoise jewelry when not reading the *New Yorker*, decks himself in rainbow blanket.

The hotel manager told me: "At a dinner party you'll find tuxedos and cowboy shirts, evening gowns and tweed suits. No one gives

them a second thought. Our imported desk clerks have trouble distinguishing millionaires from huns. The crneriest old bozo may own a dozen oil wells in west Texas."

### Texans Persecuted? Don't Believe It

Texans, as settlers and vacationists, pour into the State, many to "cool off in summer." Here, for a change, they go on the defensive. New Mexicans make them their targets in a mock-earnest feud.

"Texans," one jester told me, "claimed part of our State after the war with Mexico. Having waited 100 years, they are proceeding with the annexation. They have settled our eastern counties so solidly that this section is now called 'Little Texas.'"

"Texans in their big hats and boots," said a Santa Fe editor, "line up three deep at the bars, causing New Mexicans to go thirsty,





### Spanish Children in Talpa Are as American as Ice Cream and as Sweet as Candy

"Fifty years have wrought a vast improvement in the Spanish-American people," pioneer artist Bert Phillips told the author. "Scrawny faces and sagging, dusty clothes used to reflect their poverty. Better fed and better clothed, the race is becoming beautiful, especially the children. You can see more good-looking Spanish girls in Taos Plaza today than I could count in all New Mexico half a century ago."

but in Little Texas they have voted several counties dry. But don't mistake me," he apologized, learning I was a former Texan; "we love the Texans; they bring us lots of business."

As if in reply to these gibes, Texans-camping in Red River, a fishing resort, get together each July 4 and defiantly sing "The Eyes of Texas."

### No Bullfights—This Is *Not* Mexico

Complicating interstate relations still further, an occasional tenderfoot easterner blunders into the picture with some amazing misapprehensions. Having driven west with the aid of maps presumably less antique than the Spanish charts, he is astonished to learn that New Mexico is *not* a part of old Mexico. A New York-born storekeeper in Santa Fe gave me these quotations:

"Be sure to give me my change in Ameri-

can money. I don't want Mexican money."

"Where did you learn English? I thought everybody here spoke Spanish."

"How much duty will I have to pay to ship this package back to the U. S. A.?"

"Do the Indians go on the warpath any more?"

"When do you hold the bullfights here?"

The first thing many a visitor does upon arrival is to buy a pair of cowboy boots. His second act is to mark the golf course with his new high heels.

Curio stores tempt travelers with beaded Indian vests, cradleboards, polished petrified wood, corn-kernel necklaces, and decorated buffalo hides.

Chimayo blankets, woolen ties, and some Indian jewelry offer substantial values (pages 789 and 797). But what does a Bostonian do with his coiled-rattlesnake ashtray, or his wife with her 50-gallon Mexican hat?





### Taos Children, Growing Up in a Painters' World, Carry On an Art Class of Their Own

Jack Berkman conducts this Saturday-morning session at Harwood Foundation, an art gallery, library, and community center. His 80 Anglo-American, Spanish, and Indian pupils illustrate Indian legends. "Rain gods" and "spider mothers" never tax their fertile imaginations. They draw mustaches to look like black shoestrings. "These children are so eager to learn," says their teacher, "that we have no disciplinary problems."

A more valuable souvenir, in my opinion, is a trip into the timbered high country where irrigation waters gather. Large sections here are guarded as national forests.

Thousands of lumbermen, stockmen, and farmers depend on these forests for a living. Natural reservoirs, they impound winter snow for summer irrigation.

Louis F. Cottam, supervisor of Carson National Forest, took me driving through his timbered domain. Crossing passes nearly 10,000 feet high, we looked up at snow peaks.

No billboards marred the lovely vista, but in an aspen wilderness far removed from city traffic we came across a sign reading, "All day parking, 50 cents." What appeared to be a jest turned out to be a landowner's bid to motorists to camp on his trout stream.

Our road led through ghostly Elizabethtown, a roaring gold camp in the 1860's and '70's. "E-town" had seven saloons and three

dance halls, but no restaurant. George's Place, a fading name on an old false front, survives as a memento.

We found Elizabethtown's first and only jail a roadside ruin. *Eleanor*, a dredge which scooped \$100,000 in gold in its first year, had sunk in its own silt. Gravel, every foot once staked and claimed, scarred the fields. Only a handful of people, mostly newcomers, were left in a town which once claimed 3,000.

Gold fever had marked stretches of road with miles-long flumes and with canyon trails so steep that descending ore wagons used to drag huge logs as brakes.

Gone were old-time bearded gold seekers and their shuffling burros. In their place we saw keen young men in station wagons hunting radioactive minerals with Geiger counters.

Farther on, my guide pointed out a new fence whose green aspen posts had been gnawed by dam builders. Beaver, once trap-





### Death in Trampus Holds Not Scythe but Bow; She's a Lady

Remote Trampus (meaning Trap) is a center of the Penitentes, who during Holy Week drag the wooden-wheeled Death Cart to a place of penance called Calvary (page 824). This carved wooden skeleton is known as Doña Sebastiana. Tradition says she once discharged her arrow at a sinner. These boys get the same awful thrill from the cart that other children receive from the horror house of an amusement park.

ped almost to extinction, were coming back.

Here and there livestock nibbled at the mountain grass. On some overgrazed private lands, we observed, grass had died, springs had disappeared, trees had toppled, and land had gullied. Rains ran down such eroded slopes like water off tin roofs.

### A Fisherman's Dream—1,000,000 Trout

Protected lands were lush with grass and deep in humus. Root systems held water the year round.

"We in the Forest Service," my friend observed, "say this land is more important for

watershed purposes than for grazing. Since we desire to utilize its resources, however, we try to see that the forests are grazed moderately.

"No stick of timber," he added, "ever stays off the market because it is protected by the national forest during early life against improper exploitation. As that tree matures, we mark it for cutting; and a contractor, working through the woods in a 20-year cycle, crops it. Like a fisherman throwing under-size trout back into a stream, he allows young trees to grow.

"By avoiding mass cutting, we create no ugly vistas of stumps and eroded soil. The thinning-out method makes replanting unnecessary.

"In high, inaccessible areas, trees do fall and rot, but do not go to waste. Disintegrating, they add humus to the soil and fortify the watershed."

Visiting Red River State Fish Hatchery, near Questa, we saw a million trout, ranging from 20-inch speckled beauties to half-inch fry. Troughs indoors seethed with polliwog-

like trout still attached to yolk sacs, which they absorbed as food. Outdoors, 90 concrete ponds contained larger fish.

"Throw a fly into one of the pools," said Roy Barker, the superintendent. "It vanishes instantly. When flies are out in the evening, you can see a solid wall of leaping fish."

We finished our tour at 5 p. m.—quitting time—on a Saturday.

"Talk about your husband's holiday," said Barker. "Look what my crew does for week-end recreation."

Several of his helpers had dropped their tools, grabbed rods, and set out down a near-by





### Fat Trout Are Easy To Catch at Red River Hatchery; the Home of a Million Fish

Fishing is a major sport in New Mexico. Five State hatcheries plant some four million fish a year. Tank trucks haul legal-size trout to accessible streams; mules carry fingerlings to high mountain lakes. Cottonseed meal, wheat shorts, beef liver, and horse meat nurtured these 20-inch rainbows, the pride of Superintendent Roy Barker (right). Ospreys, swooping low, and kingfishers, sitting in ambush on electric wires, sometimes poach live fish from the concrete ponds.

stream in quest of big rainbows which their own hatchery had freed four years ago.

#### Millions of Trout Planted in Streams

In Santa Fe I talked to Roy's father, Elliott S. Barker, the State Game Warden.

"In the fiscal year 1948-49," he said, "New Mexico's five hatcheries planted 4,000,000 trout. Of these, 670,000 were legal size—six inches or more. In the well-fished streams not every man can catch his legal 15 a day, but I could show you lots of high lakes and streams, accessible only by saddle trail, where

you would have no trouble taking the limit."

"Sold!" I answered, producing \$5 for one of New Mexico's nonresident fishing licenses.

At Cowles, close to the headwaters of the Pecos River, I reached my destination, Mountain View Ranch, a dude headquarters. From the front porch that evening I watched twenty deer steal out of Santa Fe National Forest to a salt lick within easy rifle shot.

"They know we have no guns," said Lamar Lamb, the manager, "but they read the Santa Fe papers. The instant the hunting season opens, they'll take to the densest cover. In





### A Spanish-American Historian Unravels the Beginnings of Christian New Mexico

The Reverend Angelico Chavez, a wartime Army chaplain now assigned to Cochiti Pueblo, here explores antique Spanish documents in the Museum of New Mexico, Santa Fe. One of these bears the signature of Captain-General Diego de Vargas, who led the reconquest of Santa Fe. Father Chavez has brought to light the true story of La Conquistadora, the De Vargas statuette, and the origins of the Penitentes (pages 790, 824). He is one of the Franciscan Fathers, the pioneer priests who built New Mexico's first churches, converted the Indians, and suffered martyrdom rather than seek safety with retreating soldiers.

season hunters may bag deer, grouse, and turkey. A few lucky ones get permits to shoot surplus elk.

"In the million-acre forest surrounding us," he continued, "an aimless rider might wander for days without sighting road, fence, or man. But he could scarcely avoid seeing black bears, bobcats, coyotes, or whistling marmots. We know a few mountain lions by their tracks, and I have heard gossip that a couple of timber wolves survive."

One morning nine of us set out by horseback for 11,500-foot-high Pecos Baldy Lake. At first we climbed past aspens carved with hearts and initials. Presently these gave way to pines. Higher up, beyond reach of loggers, lay the bones of dead trees. As if in mourning, living trees were draped in creepelike moss.

#### We Get Lost in a Hailstorm

Though it was June, Arctic conditions prevailed. Our mounts floundered across rotting patches of snow. At 11,000 feet hailstones peppered unprotected ears, penetrated shoes and collars, and melted.

When hail covered the tracks of the leaders, we three miserable riders in the rear got lost. I was gloomily considering how I would look *en gloce* when a guide appeared and led us to camp.

The hail stopped. We lit a campfire, wolfed our supper, and spread tarpaulins. Feet on a snowbank, I shared a sloping bed with three others. Worse than the cold was the iron-hard ground. Each time I rolled over, my companions tossed simultaneously, occupying the place where I had been. Four a. m. found me, still awake, on supper's broken eggshells.

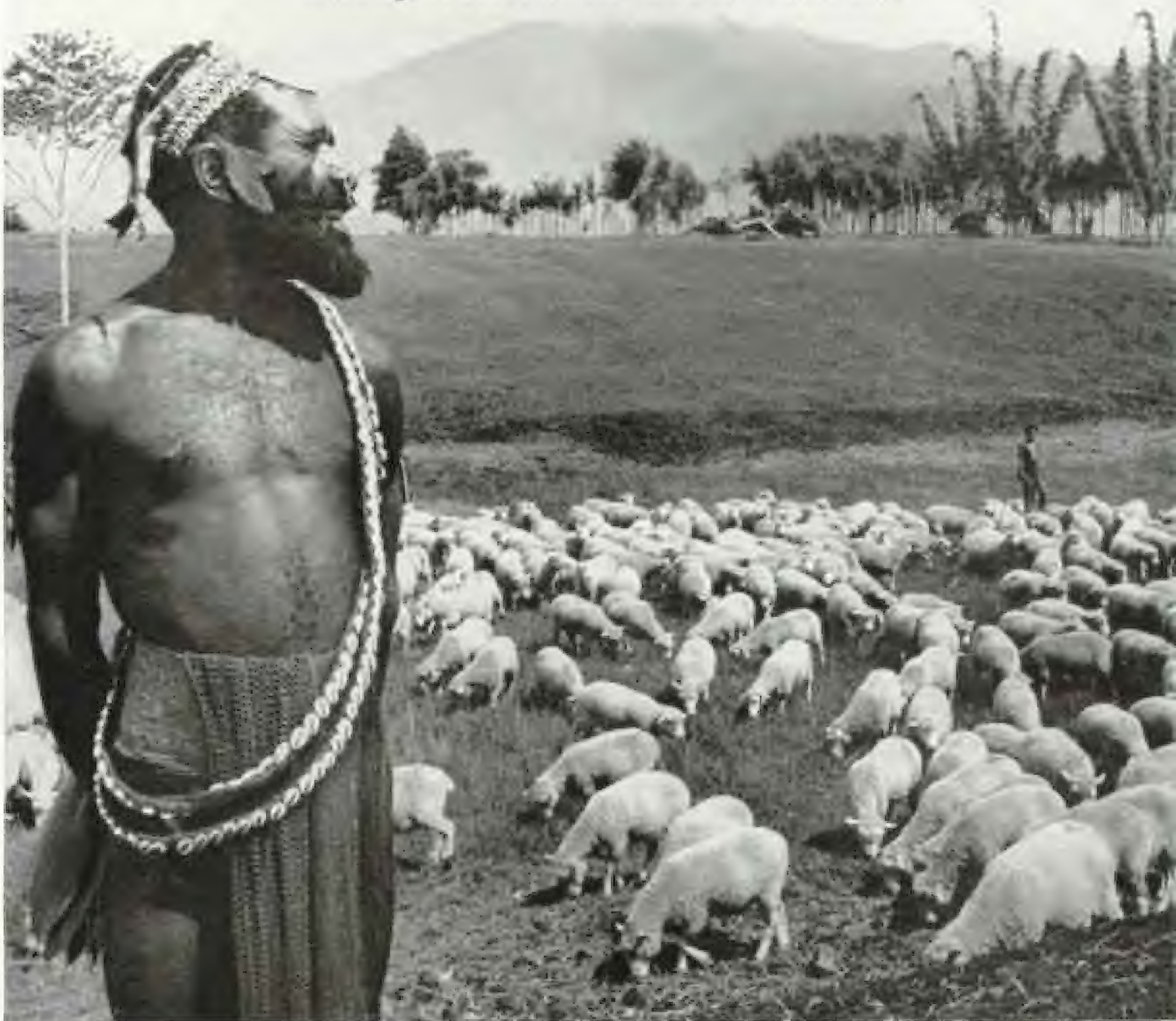
After breakfast I spread a blanket and retrieved lost sleep. Close by the spot where I froze by night I caught a sunburn.

Not until noon did I dip a line in the lake. Cutthroat trout were biting well. And were they good, fried in oil, heads and tails attached! We caught, and almost ate, the limit.

Well, that's New Mexico. I think it has something. In 1948 it attracted 6,854,000 travelers, twelve visitors for each New Mexican. Thirty-five percent of them were Texans.



## Sheep Airlift in New Guinea



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Ned Hood from Camera Club

### A New Guinea Highlander, Half-dressed in Knitted Bark, Guards His Future Wool Suit

If Europe's cave-dwelling Cro-Magnon Man could have been resurrected and dropped into the Battle of the Bulge, he would have faced an experience not much more remarkable than that of Kurup, the stalwart New Guinea shepherd, who pierces his nose with sticks and drapes his shoulders with bandoleers of sea shells.

Kurup, a member of the Papuan race, was born like Cro-Magnon Man into an age of stone implements. His known world, warm by day but cold by night, is Wahgi Valley, a 5,100-foot plateau in New Guinea's central highlands. There his forefathers, using wooden digging tools, developed a primitive agricultural civilization. Their society treated wives fairly, children indulgently, and enemy warriors chivalrously. Like civilized men, they abhorred cannibalism.

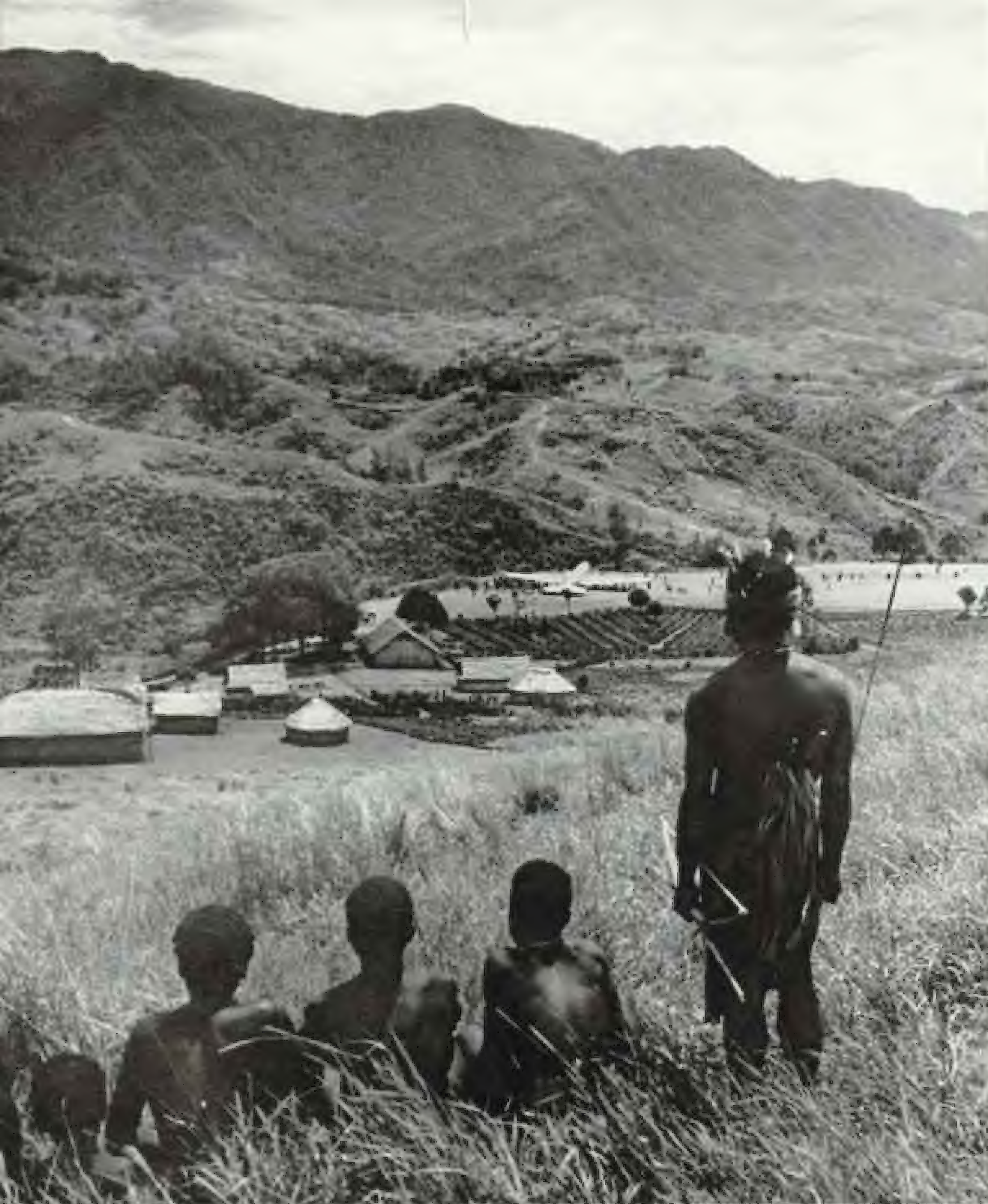
In 1933 four Australian explorers discovered Kurup's happy valley; they were welcomed as long-lost ghosts. Missionaries came next, hoping to make over Kurup's way of life.

Then World War II arrived with its strange noises, roaring airplanes, and terrifying cannon. Kurup barely became acquainted with Australians and Americans before he was made unpleasantly aware of Japanese, who bombed radar installations in his Shangri La. Antiaircraft shells rent the sky; B-17's crashed flaming into mountains.

In those days Ned Hood, an Australian officer, led a retreating band of scouts into Wahgi Valley. As he surveyed the rolling highlands, green with unproductive grass, he envisioned fields filled with fat livestock.

When peace returned, Mr. Hood persuaded an Australian philanthropist to help him realize his dream. To give the natives wool and motion, the two men arranged to have Australian sheep flown into the valley. Their aim was not only to raise Stone Age man's standard of living, but to confirm him in his rights to the land against the day when white settlers would pour in with tractors and gang plows. Kurup, if they had their wish, would not go the way of many American Indians.





832

Red Wood from Camera 1118

### Bow-and-arrow Men Watch a Plane Roll In with Sheep for Their Empty Pastures

Kerowagi, site of an American Lutheran mission, maintains a grass-green runway. Native attendants, cutting the grass with long knives, keep it as smooth as a billiard table. Once a week they police the field, picking up banana skins and other trash.

Native houses (left) have frames of solid timbers thatched with bundles of grass.

Lacking blankets, which the sheep experiment is designed to provide, Wahgi Valley folk pass the cold nights huddled around open fires in their homes.

Their mile-high valley is shielded by two purple ranges whose summits, capped with snow, rise above 14,000 feet. The forest grows up to 13,000 feet. Its pines and hardwoods provide lumber which goes into the sheep experiment's station in the village of Nondugl.

Logs were cut at first by manpower in primitive saw pits. Now the job is done by Diesel-driven saws.





### Bleating, Kicking Sheep End a 2,000-mile Flight from Australia Bellies Up

Before Wahgi Valley's pastoral age set in, its people were industrious gardeners, growing yams, tomatoes, cucumbers, cabbages, and beans. Seeds for all these except yams came from the coast across foot trails hundreds of miles long. Crops were not rotated; worn-out lands were abandoned. Farmers knowing nothing about selectivity, chose poor seeds as readily as good.

White teachers have improved the old methods. To pasture sheep, they have ripped out coarse native grasses and planted tender clover and alfalfa. They plan to introduce tea and coffee as money crops.

The people found it difficult to visualize rams, ewes, and lambs from descriptions. When the promised beasts arrived at last, onlookers at the airstrip burst into cheers.

Small boys, faces filled with wonder, here crouch beneath the plane. Do sheep bite? they seem to ask. The flock finished its long journey in good condition.





### Wabigi Valley Chiefs in Brilliant Bird-of-paradise Plumage Welcome a Benefactor

E. J. L. Hallstrom, an Australian industrialist and naturalist, endowed the sheep experiment with \$60,000. When he arrived in Kerowagi for an inspection tour, native lords gathered to shake his hand. Their faces shined with brilliant blue, red, and yellow paints. Breasts, noses, and foreheads gleamed with pearl shell and cowrie. Heads blossomed with gorgeous feathers, the envy of Oriental royalty. The white man's black-market price for forbidden bird-of-paradise plumes runs around £50 apiece; and the fine for illegal possession is about the same.

As Mr. Hallstrom prepared to leave New Guinea, a few of his new friends volunteered to cut off a finger or to nick an ear to commemorate the loss, but he told them not to grieve; he would return.

The Hallstrom Trust hopes to establish in Nondugl a zoological garden to breed Wabigi Valley's rare animals and birds. These include spiny echidnas, tree-climbing kangaroos, and 16 species of the bird of paradise. At home, Mr. Hallstrom keeps several magnificent aviaries. An authority on parrots, he is president of Sydney Zoological Park.





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Not Dressed From Vietnam 4708

### A Bangled Potentate Appraises Sheep Borne Piggyback by His Subjects

This powerful gentleman is the *uluai*, or chief, of the Kerowagi area.

Never having seen a sheep before, he knows nothing about their care, but will he admit it? The stern, authoritative expression gives the answer.

Sea-shell shells suspended from the chief's head rattle with every movement. The nose is pierced to hold a crescent-and-half-shaped shell plate which had to be carried inland across devious trade routes from southern seas the highlanders have never seen.

On his head and brow the chief wears four devices signifying his authority. These objects, which impress his subjects vastly, are an airline pilot's cap badge, an Australian Army device, an American colonel's eagle (upside down), and finally a government-granted token of office.

The chief holds office under the Papua-New Guinea Territorial Administration. His qualifications are a commanding physique and mien and a wealth of wives, pigs, and shells. Prestige is very important, enabling him to give an order and see that it is carried out. He has authority to settle disputes of a minor nature, such as theft, destruction of property, or the alienation of a wife. The white man's central government holds him responsible for his people's health and the cleanliness of their villages.

Australia governs the eastern half of New Guinea, but tropical neighbor to the north. The other half is controlled by the Netherlands. Together, the two territories constitute the world's second largest island, ranking next to Greenland.

Large sections of New Guinea remain unsettled and unexplored. Gold and oil in recent years have lured prospectors.

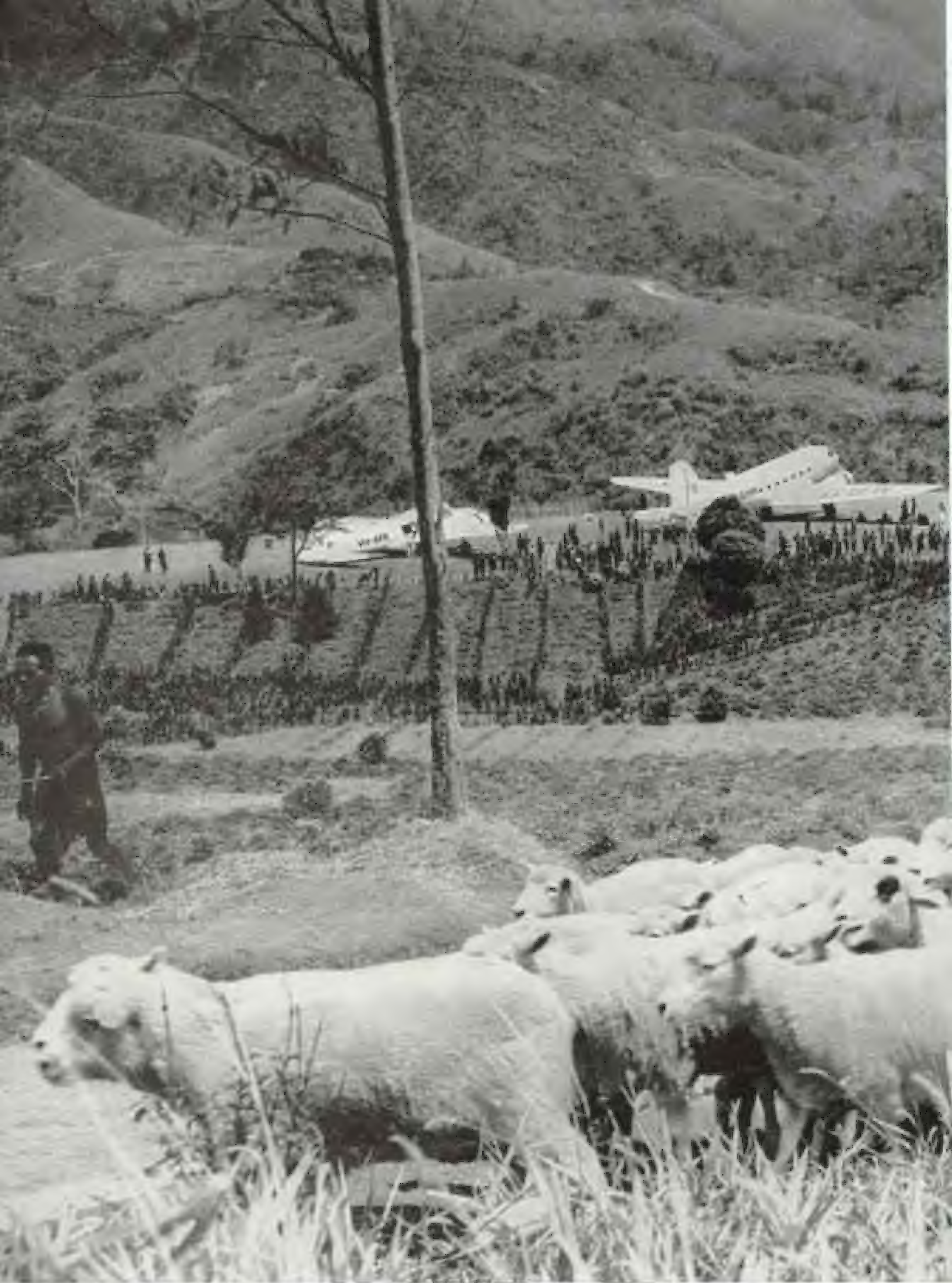
Many an American knows the island's mud, mosquitoes, and heat through having fought Japanese in its coastal jungles.

The Hallstrom Trust, to take care of the new herd, bought 500 acres of grasslands in Nondugi and erected sheds and fences. It teaches men to be good shepherds, women to be weavers. Once they have demonstrated their ability, they will receive the animals as a gift. Then exposed bodies will be clothed and vegetarian diets bolstered with animal protein.

Villagers elsewhere are expected to follow suit, on the theory that they are as eager as white folk to "keep up with the Joneses." Cattle may come later.

Primitive digging sticks and wooden spades were the first tools used on the Nondugi project. Metal instruments, flown in from Australia later, did not disconcert the natives, who immediately put them to work.





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**A Transport Plane Unloads: Its Woolly Cargo Scampers Pell-mell Across Kerowagi Gardens**  
These 60 sheep were the vanguard of 1,000 flown from Australia at a cost of \$80 a head. The breed is Romney Marsh, an English strain calculated to withstand foot rot in a land where rain falls nightly.





An Eager Army of Brand-new Shepherds with Leafy-branch Crooks Directs the Flock Home Nondugl, their destination, is 10 miles away as white men reckon distance, but  $3\frac{1}{2}$  hours as Wabpi men measure it. A road has been cut to the airstrip, and jeep tracks lead to the distant coast. All cargo must be flown in.





6.18

Not filled from Curious Old

Chanting Drummers Advance to Welcome White Men. Shell Nose Plugs and Painted Faces Twist Friendly Smiles into Seeming Scowls

Shells jingle like sleigh bells as the men march six abreast. Drums, hollowed out of wood and capped with pigskin, are carried like golf bags (left).



Between Women of All Races, the Paramount Topic Is Babies  
 Mrs. Olga Blood, 13 years in New Guinea, is used to pioneer life. Her friends  
 wear dark nets as skirts and market-basket slippers. One has a fur neckpiece.



An Unaccustomed Embrace Brings About a Gesture of Despair  
 The ewe need not be apprehensive; Wahgi folk are kind to pets. These include  
 dogs, pigs, heta, and chickens. Women on the move carry pigs and chicks.

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Red Blood from German Film





### Baby Susan Blood Goes and Gurgles; No Bogeyman Can Make a Face to Scare Her

Born at Pinschhafen, New Guinea, Susan has spent her young life among the tribes. She was a success at Nondup! the moment she flew in. Men, women, and children jostled one another to get a look at the valley's first white infant.

Susan's rubber-tired stroller was almost as great a sensation; nothing like it had ever been seen. To people who had never devised a wheel, it was a pleasure to push the carriage and feel it roll.

Baby's "sleeping" doll caused a panic. When its lifelike eyes opened and closed, brown folk threw up their hands and ran screaming in all directions. Bolder ones, staring with unbelieving eyes, stayed for a second look. They gained the impression, they confessed later, that the doll was a dead baby coming back to life.

Susan's father supervises the Nondup! Sheep Station. Her 10-year-old brother does not share her exciting adventure. Unlucky boy, he has to remain in Australia, learning his lessons out of books.

New Guinea parents pet their own children so much and punish them so little that some white folk think the youngsters are spoiled. Notwithstanding, juvenile delinquency is unknown in the highlands, and child abandonment is unheard of.





### To Her Male Nurses, Susan Is a Shining White Goddess

Lucky Mrs. Blood! Where but in Nondugl could she find so many and such willing baby-sitters? No task for Susan is too onerous. Houseboys quarreled over who should bathe and rock her for these pictures.

Wok, more accustomed to a plug through his nose, here holds a safety pin in his mouth. Au, who tucks baby into her mosquito-proof hammock, spends a good percentage of his wage on peroxide hair bleach.

Below: The Bloods' new home takes shape in the background. Above: The house is built, complete with bath. Walls are plaited of wild sugar cane. Because of the fire hazard, the kitchen is detached.

Not Blind from Camera 1714







### A Patriarch Lies Dead. Circling Mourners Shatter the Air with Anguished Wails

When a Wahgi Valley man dies, his body is laid on a leafy litter, his head is pillowed on a banana stalk, and his arms are folded across the chest. His shell ornaments and plumed headdress are placed at his side.

As relatives gather, women in an inner circle, men in the background, they make known their grief with sobs and shrieks. All day and far into the night they howl.

Mourners from distant villages, arriving with gifts of food, amplify the sad chorus.

A crescendo of moans rises when the body, flexed into a sitting position, is lowered into earth. Now the shell ornaments are broken and tossed into the pit, and a pig-proof platform is erected above the mound. Mourners then adjourn to the widow's home for a round of feasting.

Some survivors, to indicate their abiding sorrow, may cut off a finger and wrap the stump in a banana-leaf bandage. Before steel knives appeared, such operations were performed with stone tomahawks. One old woman, four times bereft, retained only the thumb on her right hand.

Such pre-Christian customs linger despite the influence of missionaries.

A cult of the dead exists across New Guinea. Wahgi Valley's first white explorers were mistaken for returned ghosts seeking homes and relatives. Some were "recognized" and bade to tarry. Others were waved on to distant villages.

Women here wear the string bag suspended from heads as well as from waists. They fashion fabric from shredded bark. Fibers they spin by hand against the naked thigh, using a chalky powder to prevent chafing. Threads they knit laboriously, with a single needle of polished bamboo or rassawary bone sharpened at one end and carved with an eye at the other.

Every oddment of cloth is prized. Women pick it to pieces, spin the threads anew, and make another net bag. At times they mix fur of the tree-climbing kangaroo with bark threads.

Net bags carry not only food and possessions but babies as well. Quilted only with pandanus leaves, infants journey with their mothers in all kinds of weather; consequently their death rate is high. Pneumonia is a common killer.

The introduction of warm woollen garments is designed to save many lives needlessly lost.

Woman's lot in Wahgi Valley is dull. She does the housework, weeds and plants the garden, feeds pigs and poultry. When traveling, the wife carries not only her latest born but a net bag of food weighing up to 60 pounds. Her lord and master, adorned in feathers and war paint, walks in front, burdened only with his drum or fur-decked spear. Man is the hunter, or was, for with the approach of civilization hunting is fast disappearing.

Wahgi children are not unlike their kind all over the world. They have their games, including top-spinning.

Boys catch fish with lines, or, banded together, chase their prey into shallows, where they seize them barehanded. With miniature bows and arrows they shoot small birds.

Girls are taught to weave fabrics, care for babies, and help mothers with kitchen and garden chores.



## Ballroom Dancing: Cheek to Cheek, Nose to Nose

Kudril and Mia, sitting on a floor and awaying in ecstasy, perform the *kumata*, the valley's only mixed dance. Throughout the long night its movements never vary, and its orchestra music, compounded of drumbeats and chants, repeats itself monotonously.

A society matron has called these young people together in her firelit home. As their chaperon, she keeps a sharp eye on every action. She is vigilant to see that men and women change between dances, for steady partnerships she considers shocking. In fact, she is offended by some polite conventions of white society. Naturally, she thinks it proper for married men to dance with single girls, for polygamy is the rule.

Here in a smoky, firelit room, eyes glitter, heads roll, and stick-in-nose sometimes presses against shell-in-nose. The party will continue until hostess or dancers are exhausted. Thus does boy meet girl in New Guinea.

Red Blinded from Camera (71)



## "West" Is "East's" Brother Beneath Painted Skin

Wi, who helped to build the Bloods' home, fancies Western dress. Kalama, his brother, favors conservative stick-in-nose and kumal-grass headdress. They have this in common: both use dad's paint pot.

In Nandugi, adolescent boys like Wi and Kalama sleep in a dormitory separate from the family's. They meet prospective brides at dances like the one above.

Marriages are arranged by parents, whose major consideration is the dowry. Except in cases of unusual affluence, the price of a bride has been four to six pigs or an equal number of pearl-shell plates. Sheep appear certain to figure in future marriage contracts.

Once married, the bride lives with her in-laws until the husband builds a home. Such a house requires no 20-year mortgage: the only expense is two or three days' labor.





### Feathered, Shell-bright Dandies Smile at the Prospect of Fancy Woolen Garments

These young drummers, their arms and fingers entwined in good fellowship, meet at Kerowagi airstrip to lead the celebration attending the arrival of the sheep.

They measure their wealth by counting plumes, shells, pigs, and wives. Their bird-of-paradise feathers, golden, orange, and apricot in color, were obtained with bows and arrows, but nowadays, with the advent of firearms, the boys try to borrow shotguns and buy shells.

From forehead to nose, one boy wears a fashionable hair of penantlike feathers taken from King of Saxony's bird of paradise. Armbands are woven from small strips of cane.

Obviously, these gallants are very conscious of their appearance. They have devoted hours to primping, arranging headdresses just so, and applying face paint like fading beldams. To achieve raised tribal scars, they have endured tortures under the tattooer's knife and have suffered ashes rubbed into wounds.

If born into the old days, these men would have devoted their days to training for war.

Wabgi Valley communities, like nations, once were divided into hostile camps eager to throw themselves at one another's throats at the slightest excuse. Though savagery seemed dominant, actually a primitive code of chivalry prevailed.

Lancers, archers, and axmen, arrayed in gorgeous plumes and marshaled five abreast, met on battlefields determined by mutual choice. Armies suspended fighting by night, and warriors returned to their homes confident the enemy would not resort to sneak attacks. After the battle, victors permitted vanquished to remove their dead.

In less than a generation, State and missionary influence has brought tribal warfare to the vanishing point. Trial by divination, the old-style justice, is on its way out. A facsimile of Western law and order has been established.

Judges and prosecutors from Port Moresby, the administrative capital, tour the hinterland at intervals, trying major cases. Lesser offenses are judged by resident magistrates. Courts honor native laws and customs lest the 20th century's impact prove too sudden and stunning to a people fresh out of the Stone Age.

During World War II a dysentery epidemic, spreading from the Japanese-held coast to the highlands, laid thousands low. Community health was restored by sulfon drugs flown in by Americans. Returning the favor, Australians shipped the valley's green vegetables to their Yankee allies.

Wabgi folk speak a non-Melanesian tongue divided into three dialects so complex that it takes a Westerner years to master them.

Communication between races is generally carried on in pidgin English, which natives learn readily.



# The Society's New Map of Classical Lands

**M**ODERN and ancient geography are effectively combined in the new 10-color map of Classical Lands of the Mediterranean, which comes to the 1,850,000 members of the National Geographic Society with this issue of their NATIONAL GEOGRAPHIC MAGAZINE.\*

The new chart, a companion to The Society's map of Bible Lands and the Cradle of Western Civilization, distributed with the December, 1946, NATIONAL GEOGRAPHIC, is drawn on the generous scale of 43.4 miles to the inch. It is an indispensable aid to students and also affords a fascinating refresher course in the rise of civilization.

Two hundred and seventy historical notes, printed in red, appear on the new map. Thus the chart carries some 2,600 words of notes, as well as 5,200 place names, without overcrowding or impairing legibility.

## Modern and Ancient Names Listed

The notes provide hours of entertaining reading. The double listing of ancient and modern place names is an incomparable aid in historical or geographical research.

Modern official place names are listed first, with ancient names directly beneath or beside them in brackets. Unofficial or Anglicized names, honored only through long usage, have been omitted. For example, the island of Corfu, off the southern tip of Albania, is listed as Kerkira (Corcyra); Florence, Italy, is Firenze (Florentia); Constantinople, Turkey, is Istanbul (Byzantium).

Regional names designate areas as they existed in ancient times. On the new map, Liguria, in Italy, extends as far north as the Po River, its expanse in the days of Caesar Augustus. The modern Province of Liguria is a narrow coastal strip stretching from the French border east to La Spezia.

Calabria, on the map, identifies the "heel" of Italy's "boot." Today Calabria is the "toe." The name was switched from heel to toe some twelve and a half centuries ago.

All of Italy, Greece, and Albania fall within the borders of the new map, along with parts of eight other countries and the islands of Malta, the Dodecanese, and Crete.

Many areas of the new map recall vividly the heritage bequeathed us by historic peoples and places of long ago.

Nearly 40 centuries ago the Minoan kings on the island of Crete were men of vast wealth. Here they built huge palaces of stone. Their people worshiped the bull as a sacred animal. Their craftsmen made pottery and engraved metal of high artistic merit.

On Crete arose the well-known legend of Theseus, the Athenian, who came to the island, entered its fabulous labyrinth, and there slew in his stronghold the Minotaur, a monster half bull and half man who fed upon human flesh.

The map of ancient Greece recalls the haunts of philosophers (Socrates, Plato); poets (Homer, Sappho); warriors (Leonidas); sculptors (Phidias); and statesmen (Themistocles, Pericles).

One of the map's six insets shows ancient Athens, with historic spots listed. There is the Grove of Academus, where Plato taught and whence comes our English word "academy"; the Lyceum where Aristotle gathered with his pupils; and Piræus, whose importance as a port was visualized by Themistocles as early as 500 B. C.

Italian place names and notes recall the early Etruscans; the building of Rome on its seven hills; the days of the Republic when Cicero and Cato held forth in the Forum; and the era of the emperors, from the mighty Julius Caesar to the weaker monarchs of a later day who finally succumbed to the barbarians from the north.†

Scanning the map, the reader will be reminded of the martial exploits of the Caesars, Hannibal, and Alexander. Scenes of decisive land and naval engagements are noted, along with ruins and sites of dead cities as important to the ancients as are London, New York, and Paris to our modern world.

## Guide to St. Paul's Journeys

On The Society's map of Bible Lands, the missionary journeys of St. Paul were outlined in an inset. On the new map most of these historic travels may be followed in detail.

Thessaloniki, capital of Macedonia and the modern Salonika, knew St. Paul well. How he and Silas preached to the Christians there is told in Acts 17; and I and II Thessalonians are addressed to them.

Acts 17 also tells of St. Paul's appearance in the market in Athens, where he disputed with the Epicureans and the Stoics—an example of the epic clash between Greek philosophical teachings and Christianity.

\* Members may obtain additional copies of the map of Classical Lands of the Mediterranean (and of all standard maps published by The Society) by writing to the National Geographic Society, Washington 6, D. C. Prices, in United States and Possessions, 50¢ on paper; \$1 on linen; Index, 25¢. Outside United States and Possessions, 75¢ on paper; \$1.25 on linen; Index, 50¢. All remittances payable in U. S. funds. Postage prepaid.

† See, in the NATIONAL GEOGRAPHIC MAGAZINE, "The Roman Way," by Edith Hamilton, November, 1946.



## CITATION OF HONOR



### THE AIR FORCE ASSOCIATION PAYS TRIBUTE TO THE NATIONAL GEOGRAPHIC SOCIETY

FOR OUTSTANDING SERVICES TO  
AIRMEN ACROSS THE GLOBE DURING WORLD WAR II  
BY PROVIDING INVALUABLE CARTOGRAPHIC AIDS AND INFORMATION  
AND THEREBY CONTRIBUTING GREATLY  
TO THE ACCOMPLISHMENT OF THEIR MISSIONS

*C. R. Smith*  
PRESIDENT

TO: The National Geographic Society  
FROM: The Air Force Association

World War II introduced global conflict for the first time in history, and with it the demand for cartographic information to guide American airmen and airplanes to the far corners of the earth and back again.

That the military services could not meet this demand was part of national unpreparedness. That a non-military agency, the National Geographic Society, could help fill the breach was at once a tribute to the significance of this organization and a testimonial to the civilian contributions that made victory possible.

The maps and charts of the Society guided men of the Air Force over the waters of the Atlantic and the ice caps of the Far North; over the islands of the Caribbean and the jungles of South America; helped build the air routes of Africa; went with the men of the Air Force over the Himalayas from India to China; took airmen up the long, hard island route of the Pacific from near defeat in Australia to victory in Japan.

For its ability to meet the emergency requirements of its country, for its invaluable contributions to the Air Force in accomplishing a global mission, the National Geographic Society is awarded this Citation of Honor for outstanding public service.

*The Air Force Association*

*Chicago  
July 2, 1949*

*C. R. Smith  
President*

#### National Geographic Maps Guided Airmen over Icecaps, Jungles, Seas, Mountains

When war came, The Society gladly opened its vast storehouse of world maps and factual cartographic data for use of our armed services and our Allies. More than a million copies of hemispheric maps were made available, followed by a series of battle-area maps produced by The Society's cartographers. From 1940 through 1945 The Society supplied to its members and the armed services more than 37,000,000 large ten-color maps. The Air Force Association's bronze plaque and its citation (above) were presented to The Society July 2, 1949, in Chicago by C. R. Smith, its president.



It was at the Greek seaport of Corinth that Paul dwelt with Aquila, the tentmaker (Acts 18). After an 18-month stay he departed for Syria, taking Aquila and his wife Priscilla with him. During a later visit to Corinth, scholars believe, he wrote the Epistle to the Romans.

Acts 19 tells of Paul's trip along the "upper coasts" to Ephesus in Turkey; his two-year stay among the Ephesians; and his encounter with Demetrius, the silversmith, who made shrines for the Temple of Artemis. Ephesus, it will be remembered, was one of the "seven churches" mentioned in Revelation 1:11.

Scholars believe that I Corinthians was written during Paul's stay at Ephesus and that II Corinthians was written while he was on his way through Macedonia.

Paul later made his historic journey to Rome (Acts 28) about A. D. 59.

Sites of four of the Seven Wonders of the Ancient World come within the scope of the new map.

One was the original Temple of Artemis in Ephesus, on the Aegean coast. Ionian cities cooperated to build this monument, a marble building 425 feet long and 225 feet wide. The roof was supported by 127 columns of Parian marble, each 60 feet high. Ctesiphon was the architect. In 356 B. C. the temple was burned by a fanatic.

Another wonder was the statue of Zeus, in the valley of Olympia near the west coast of Peloponnesus. Phidias, the famed sculptor, built this marble, ivory-encrusted memorial. Its draperies were of beaten gold.

The tomb of Mausolus, a third wonder, was built by the king's widow at Halicarnassus, on the coast of present-day Turkey, in 352 B. C. It was remarkable for its magnificent interior. The building was destroyed by an earthquake, but its name, the Mausoleum, has come down to us today.

Incidentally, Halicarnassus was the birthplace of Herodotus, the noted traveler and historian of the ancients.

Also destroyed by an earthquake was a fourth wonder, the Colossus of Rhodes, a brass statue representing the Greek sun-god, Apollo. It stood about 109 feet high at Rhodes, on the island of Rhodes.

Others of the Seven Wonders, not located within the borders of the new map, were the Pyramids of Egypt, the Hanging Gardens of Babylon, and the Pharos, a white-marble lighthouse on the island of Pharos, in the port of Alexandria, Egypt.

Other remarkable ancient accomplishments noted on the new map are the Circus Maximus and the Colosseum at Rome,

and the Appian Way (Ancient Rome inset).

The Circus Maximus was built by King Tarquin and enlarged by Julius Caesar. Its further expansion by the end of the fourth century after Christ enabled it to seat 385,000 spectators at horse and chariot races.

The Colosseum, built by 12,000 slaves from Jerusalem, had a seating capacity of 50,000 and standing room for 20,000 more. Wild animals were kept in dens beneath the floor. Thousands of persons, including early Christians, perished here in combats with tigers and lions.

The Appian Way, begun by censor Appius Claudius about 312 B. C., stretched 360 miles from Rome southeast to Capua, and thence to the east across Italy to Brindisi (then Brundisium), on the Adriatic Sea.

#### Inset Shows Greco-Roman World

In the upper right-hand corner of the new map a large inset of the Greco-Roman World compares the greatest extent of Alexander's empire in 323 B. C. with that of Rome at the time of Trajan, A. D. 116. Phoenician and Greek settlements which played an important role in the development of early culture are indicated by patterns of dots, blue for Phoenician and red for Greek.

Names used in the inset retain classical or Latin forms of the time when Latin was spoken, if not read, by educated Europeans. Modern names appear in brackets.

Three smaller insets show the geography of the world as it was known in the time of Homer, Herodotus, and Strabo, a period covering the first 1,000 years of recorded history.

The Greeks of Homer's day believed the world was a flat, circular plate, the limits of which were enclosed by the River Oceanus. The inhabited world then centered chiefly around the eastern Mediterranean and Black Sea regions. Their hazy knowledge of the western Mediterranean is represented by scattered islands inhabited by monsters such as Scylla and Charybdis. Homeric Greeks feared the sea and confined their shipping to near-by coastal areas.

There is a strong suspicion that stories of monsters and terrors were circulated by the seafaring Phoenicians to discourage competition in their maritime trade.

Herodotus lived about 400 years after Homer. The inset of his world incorporates four centuries of geographical progress. The Greeks by this time had ventured into the western Mediterranean. Italy, Sicily, and lands west were recorded. Regions south and east of the Black Sea as far as India became a part of the inhabited world. The North



African coast from the Pillars of Hercules to the Nile, together with Phœnician and Egyptian settlements, were better known.

Strabo was born at Amasia in Asia Minor about 63 B. C. His world as shown in the third inset is a composite cartographical picture of the inhabited world as it was known at the dawn of the Christian Era.

The world of Strabo also expanded in direct proportion to the movements of man. As traders and scholars returned from outward journeys, better accounts were recorded of the Britons and people north and south of the Danubë (Ister). As trade flourished, lines of communication lengthened. More detail of land masses was given.

### New Map Guide for Air Travelers

Modern highways on the new map are shown with a red half-tone line; railroads are drawn in black. Approximately 70 important air terminals are shown, each indicated by a red star.

Sight-seeing from the air on a flight from Rome to Athens with The Society's new map in hand could afford fascinating identifications of the varied scene beneath.

Beyond Rome the panorama would include modern Cassino, front-page news of World War II; and Arpinum and Venusia, birth-places of Cicero and Horace. Farther southeast near the Gulf of Taranto, the site of Heraclea would come into view. Here, in 280 B. C., the elephants of Pyrrhus, King of Epirus, terrorized the horses of the Romans and added to the defeat of the Roman army.

Crossing the Ionian Sea to the west coast of Greece, passengers could identify the site of Actium where Octavian defeated the fleet of Antony and Cleopatra in 31 B. C. Twenty-five miles south are the cliffs of Leucate, the promontory of the ancients, where at Apollo's festival criminals with birds attached were thrown from cliffs. Those that survived were set free.

Approaching Athens, passengers would see Mount Oeta, where Hercules came to die on a pyre; and Mount Parnassos, reputed landing place of Deucalion, the Greek Noah.

The Italian town of Adria, the Atria of the ancients, originally founded on the Po estuary, is now 14 miles from the sea. Black silt from Italy's steep mountain sides and fertile valleys has been carried down swift-flowing rivers, burying villages and bulking up a huge delta similar to that of the Mississippi River. The Adriatic Sea takes its name from the city, which means "Black Town."

Southwest of Rome lies Ostia, ancient port of Rome, at the mouth of the Tiber River.

Its name comes from the Latin *ostium*, meaning "mouth."

Sand brought down to the sea by the Tiber finally made navigation at Ostia dangerous; so a new harbor named after Augustus was built three miles to the north, on the right arm of the river. Today both of these former coastal towns are three miles inland. But modern machinery keeps both mouths of the Tiber open. Swamplands have been drained and transformed into fertile fields and seaside resorts.

The site of Helice, capital of ancient Achaia in the northern Peloponnesus, cannot be shown on the map. Helice was destroyed by an earthquake and swallowed up by the sea.

The famous pass of Thermopylae, heroically defended by a handful of Spartans under Leonidas against the Persian army of Xerxes, was at the time of its defense a scant quarter of a mile from the sea. Alluvial soil carried via the Sperkhiós River for the past 2,430 years has forced the sea to recede, so that now the pass is some three miles from the coast. Modern Greece has recently drained the soil deposits and reclaimed the land for rice culture.\*

Thermopylae, meaning "Hot Gates," is derived from the Greek words *thermos*, hot, and *pyla*, gate, so named because of the hot sulphur springs at the gateway to north and south Greece.

The town of Siena, Italy, noted for its excellent clay, gave its name to the English word "sienna." From ancient Ammonium in western Egypt, chief seat of worship and oracle of the god Ammon, is derived the words "ammonia" and "ammonium." The descriptive verb "meander" comes from the winding Menderes River (Maeander), south of Izmir, Turkey.

Placed above the title of the map is a list of well-known mythological characters given in both Greek and Roman forms. Thus the Goddess of Beauty was Venus to the Romans, Aphrodite to the Greeks. Hercules, hero of nearly every school child, is the Roman version of the Greek Heracles.

International boundaries on the new map are shown as they exist today. The Dodecanese, recently Italian, are now tinted yellow, the same as Greece, the mother country. The Italo-Yugoslav and Franco-Italian frontiers are shown according to World War II peace treaties. The new Free State of Trieste is not "free," but continues to be under military occupation because of Italian-Yugoslav failure to agree on an administrator.

\* See "War-torn Greece Looks Ahead," by Maynard Owen Williams, page 711.



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## ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

To carry out the purposes for which it was founded sixty-one years ago, the National Geographic Society publishes this Magazine monthly. All receipts are invested in The Magazine itself or expended directly to promote geographic knowledge.

Articles and photographs are desired. For material The Magazine pays generous remuneration is made.

In addition to the editorial and photographic surveys constantly being made, The Society has sponsored more than two scientific expeditions, some of which required years of field work to achieve their objectives.

The Society's notable expeditions have pushed back the historic horizons of the southwestern United States to a period nearly eight centuries before Columbus crossed the Atlantic. By dating the ruins of the vast communal dwellings in that region, The Society's researches solved secrets that had puzzled historians for three hundred years.

In Mexico, The Society and the Smithsonian Institution, January 25, 1930, discovered the oldest work of man in the Americas for which we have a date. This slab of stone is engraved in Mayan characters with a date which means November 4, 931 A. C. (Spinden Correlation). It antedates by 200 years anything heretofore dated in America, and reveals a great center of early American culture, previously unknown.

On November 21, 1935, in a flight sponsored jointly by the National Geographic Society and the U. S. Army Air Corps, the world's largest balloon, Explorer II, ascended to the world altitude record of 72,000 feet. Capt. Albert W. Stevens and Capt. Orvil A. Anderson took aloft in the gondola nearly a ton of scientific instruments, and obtained results of extraordinary value.

The National Geographic Society-U. S. Army Air Forces Expedition, from a camp in southern Brazil, photographed and observed the solar eclipse of 1947. This was the seventh expedition of The Society to observe a total eclipse of the sun.

The Society cooperated with Dr. William Beebe in deep-sea explorations off Bermuda, during which a world record depth of 3,038 feet was attained.

The Society granted \$25,000, and in addition \$19,000 was given by individual members, to the Government when the congressional appropriation for the purpose was insufficient, and the forest of the giant sequoia trees in the Giant Forest of Sequoia National Park of California were thereby saved for the American people.

One of the world's largest icefields and glacial systems outside the polar regions was discovered in Alaska and Yukon by Bradford Washburn while exploring for The Society and the Harvard Institute of Exploration, 1934.



To Jim —

for holding my hand  
tight the day we  
were married...

for seldom remarking, "That's what I  
had for lunch."

for sparing me those chilly trips to  
heat the 6 a.m. bottle.

for never opening my mail (though I  
sometimes do yours).

for the things you didn't say the time  
I ripped off the feeder.

for balancing my checkbook without  
grumbling or pouting.

for not having to be defrosted when I  
forgot to send your suit to be pressed.

for treating my women friends as  
though you liked them.

for the way your eyes light up when our  
gloves happen to meet at a party.

for being so eternally there for me  
to lean on!

for wanting a good watch for  
years and years, but being too  
unselfish to go and spend the  
money on yourself.

Dearest, here's your Hamilton with all  
my love!

Peggy

*NOTE: This letter is published for the fourth time  
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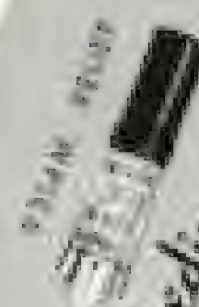
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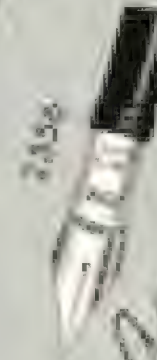
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**Budd**



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Now the whole family can enjoy finished pictures just 60 seconds after you take them! The Polaroid Land Camera is easy to use. A single dial sets both lens and shutter speed. Then just snap the shutter, press a button, pull a tab and a minute later . . .

See a beautiful big print — in the now-famous salon-quality sepia tone. It's complete even to the crisp white border. The picture is ready to enjoy at once and will last for years to come.



Start using the Polaroid Land\* Camera the moment you open the box, for anyone can take good pictures-in-a-minute, indoors or out. Once-in-a-lifetime scenes — around the Christmas tree, the opening of the stockings, the family reunion — are yours for sure. You see each picture immediately, can improve pose and lighting as you go along. This is the only camera that gives you a second chance!

More than five million pictures have already been made by Polaroid Camera owners. Professionals and amateurs alike are finding the Polaroid Camera opens a whole new field of photography.

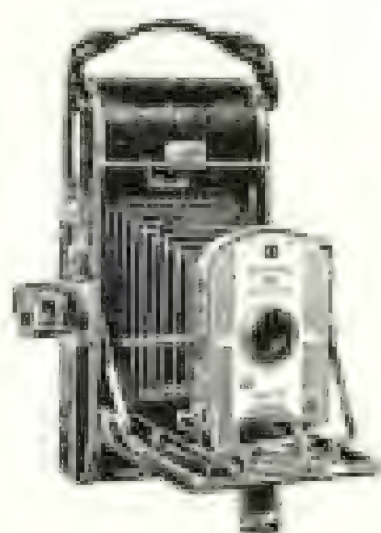
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\*Named for its inventor, Dr. Edwin H. Land  
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*Writes dry  
with wet ink!*





## Here's one to eat and have

**F**OR industries seeking greater opportunity for growth and progress, the South is a "cake" that proves the old proverb wrong.

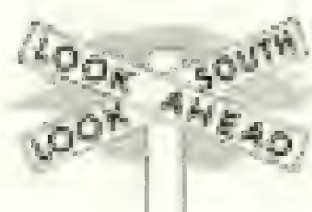
Here along the Southern Railway, industries are discovering that they can "have their cake and eat it, too." They're thriving on the unique combination of favorable economic

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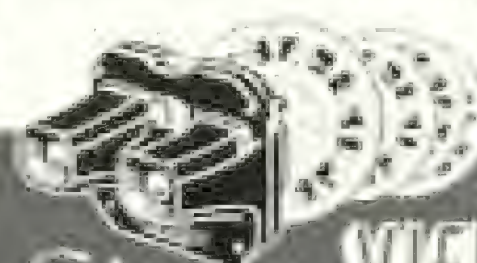
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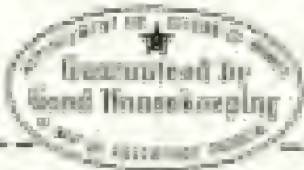
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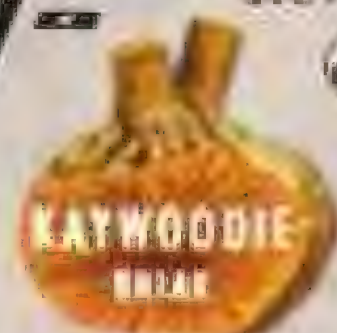
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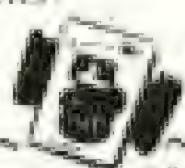
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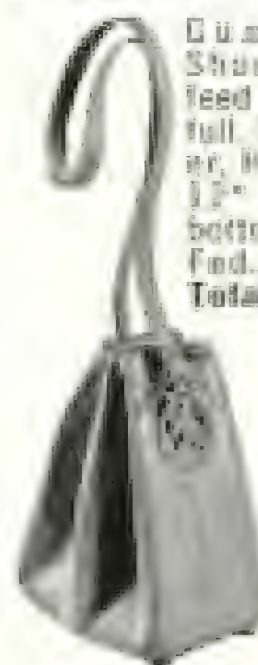
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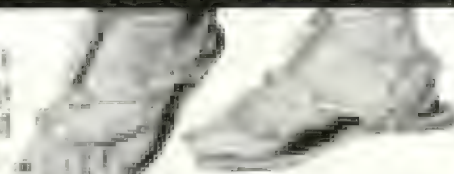
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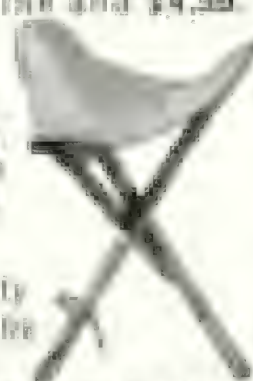


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# For Safer Autumn Driving

Autumn, with its crisp, cool days, is usually one of the most pleasant seasons of the year for motoring—but this can be enjoyable only when it is safe.

The President's Highway Safety Conference reports that the traffic fatality rate has dropped steadily in the postwar period from 11.3 for each 100,000,000 miles of vehicle travel in 1945 to 7.3 in 1948. While this is encouraging, the 32,000 automobile accident fatalities last year indicate the need for greater improvement.

Safety authorities agree that most accidents

are the result of *drivers' mistakes*. By far the most important cause of accidents is the failure of drivers to adjust speed to changing road and traffic conditions. For example, 55 per cent of all fatal accidents happen at night, when vision is obscured, and 14 per cent occur in inclement weather, when roads are slippery.

Traffic experts stress driving at reasonable speeds as one of the most important steps in reducing highway accidents. In addition, they make a number of other suggestions, some of which are illustrated below:



**1. Vehicle defects** are reported as contributing causes in many accidents. So, it is important to have your car completely checked at regular intervals to make sure it is in safe operating condition. Particular attention should be given at all times to brakes, tires, steering mechanism and lights.



**3. Collisions** frequently occur when cars are too close together. On dry pavements, a good rule is to allow one car length for every 10 miles of speed. This margin should be increased at night, on slippery roads, or at high speeds.



**2. Skidding on slippery surfaces** is a frequent cause of accidents. To help avoid this, brakes should be applied with light pressure, then released and applied again. Jamming the brakes on will lock the wheels and may cause a skid.



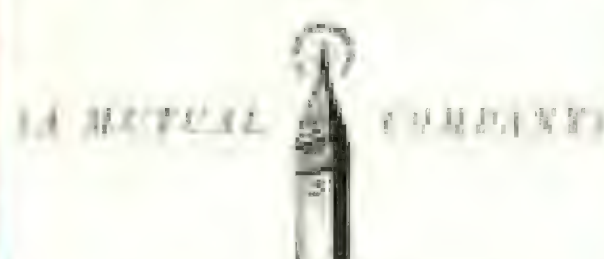
**4. Emergencies** need not always cause accidents if drivers know how to handle them. For example, when a tire blows out, keep a tight grip on the wheel and allow the car to slow down before applying the brakes. This makes it easier to prevent swerving or skidding.

The cardinal principle of safe driving is to keep one's car under control at all times. Only as more and more motorists observe this basic principle can the number of automobile accident fatalities be further reduced.

For more information, send for Metropolitan's free booklet, 120N, called "How's Your Driving?"

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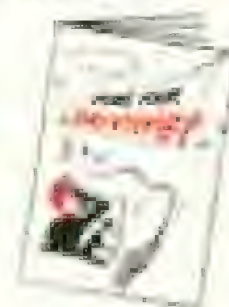
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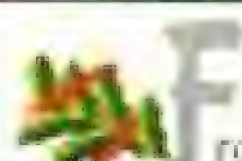


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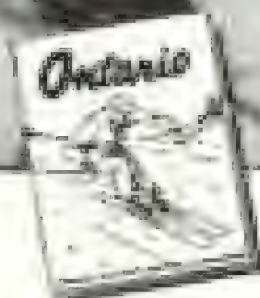
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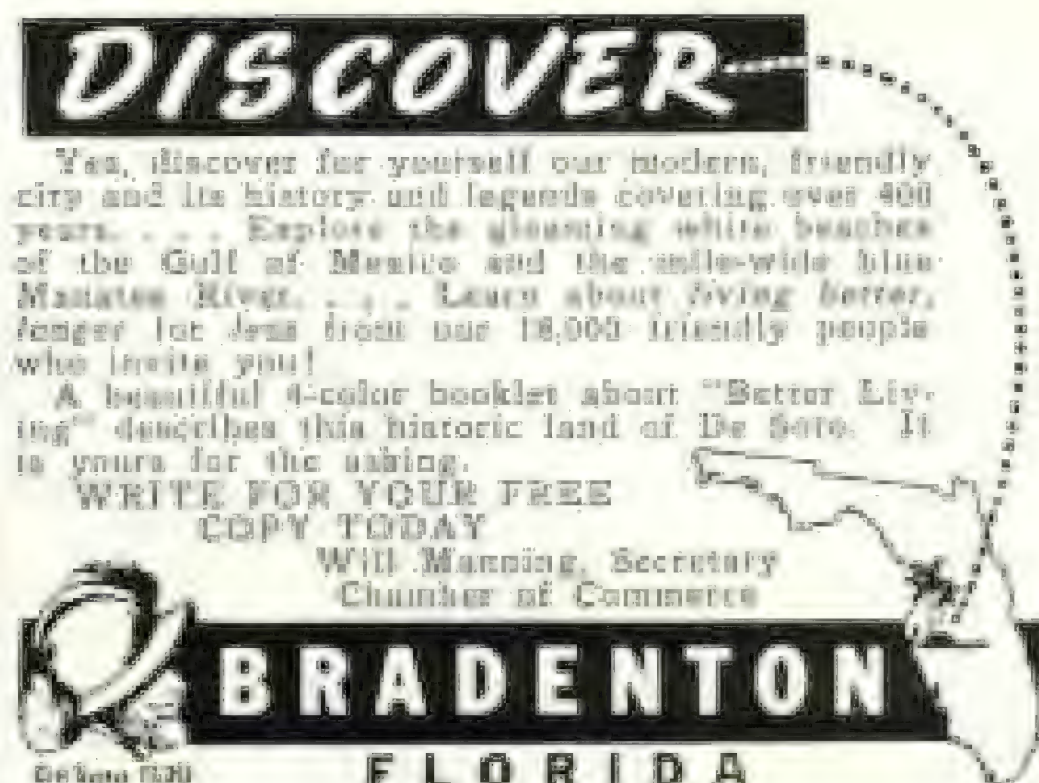
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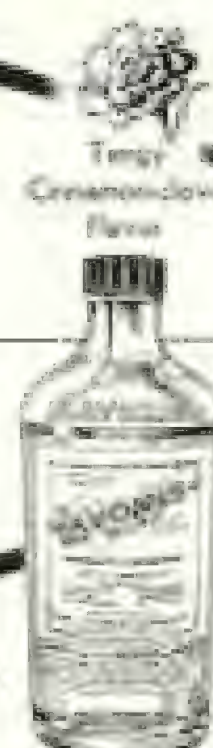
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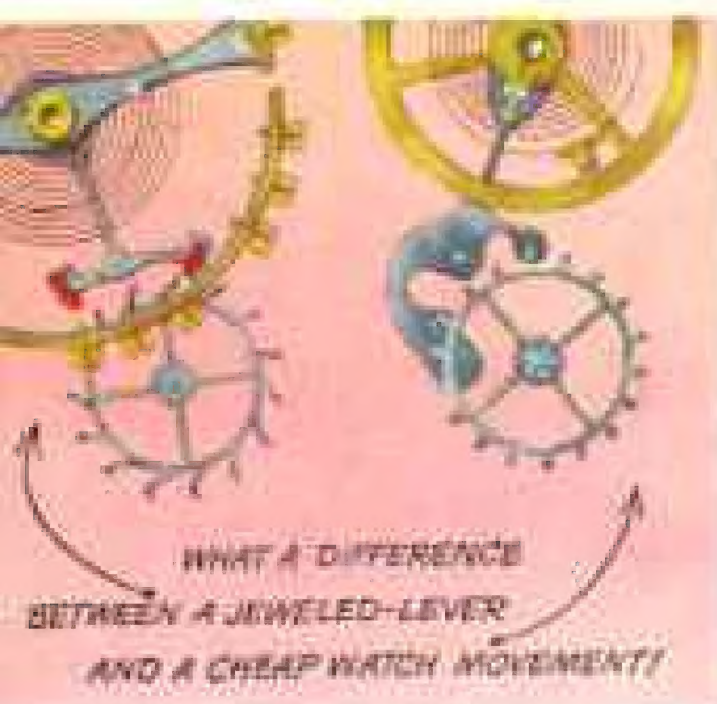




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